

The Relationship between Spatial Planning and Transportation Planning in Southern Africa and its Consequences for Human Settlement

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Abstract—The paper reviews the relationship between spatial and transportation planning in the Southern African Development Community (SADC) region of Sub-Saharan Africa. It argues that most urbanisation in the region has largely occurred subsequent to the 1950s and, accordingly, urban development has been profoundly and negatively affected by the (misguided) spatial and institutional tenets of modernism. It demonstrates how a considerable amount of the poor performance of these settlements can be directly attributed to this. Two factors in particular about the planning systems are emphasized: the way in which programmatic land-use planning lies at the heart of both spatial and transportation planning; and the way on which transportation and spatial planning have been separated into independent processes. In the final section, the paper identifies ways of improving the planning system. Firstly, it identifies the performance qualities which Southern African settlements should be seeking to achieve. Secondly, it focuses on two necessary arenas of change: the need to replace programmatic land-use planning practices with structural-spatial approaches; and it makes a case for making urban corridors a spatial focus of integrated planning, as a way of beginning the restructuring and intensification of settlements which are currently characterised by sprawl, fragmentation and separation

Keywords—Corridors, modernism, programmatic planning, structural-spatial planning

I. INTRODUCTION

THE focus of this paper is on the relationship between spatial and transportation planning in the Southern African Development Community (SADC) and the consequences of this for urban settlements in the region. The argument is presented in a number of sections.

Section 1 is this introduction. Section 2 identifies the problems generated by planning systems which are underpinned by the urban precepts of modernism. Section 3 focuses on the discipline of transportation planning in the region. It identifies four characteristics of the practice of transportation planning which are problematic. Section 4 is concerned with the future and achieving significant improvements in settlement performance. It identifies some major international dynamics which will significantly impact on urban settlement over the next few decades and, from this, identifies the performance qualities which settlement planning should be seeking to achieve.

It argues that to achieve this, two fundamental changes are necessary. The first is changing from programmatic, land-use focused planning approaches, to structural-spatial approaches which have structure and space at their core and which integrate spatial and transportation planning. The second is adopting the concept of urban corridors as a primary instrument of urban restructuring and intensification and making corridors, as opposed to jurisdictional boundaries, the focus of integrated planning.

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II. THE PROBLEM

A dominant tendency in Southern Africa is increasing rates and levels of urbanisation. By international standards, levels of urbanisation in the region are amongst the lowest in the world. South Africa has the highest levels (some 60%), followed by Zambia (some 55%) but all other countries are lower, (Zimbabwe, Angola, Swaziland and Botswana are below 35% and Tanzania, Mozambique, Malawi, Namibia and Lesotho are below 20%). The clear implication of this is that very significant amounts of urbanisation are yet to come. Most of the urbanisation has occurred since the 1950s and has been powerfully influenced by the international tenets of modernization: the planning systems in these countries have been largely set up to implement these tenets, perhaps most clearly expressed in the Athens Charter of 1934 (Dewar & Todeschini, 2004).

A. *The Central Spatial Ideas of Modernism*

- An entrenched anti-city ethos. The free-standing structure surrounded by space (the pavilion) has been seen as the basic building block of settlements, as opposed to a centuries-old tradition where public spaces and public institutions were the primary building blocks. The search under modernism was for qualities of 'suburbia' as opposed to urbanism.
- An overarching concern with separation. Activities, particularly working, living, recreating and moving, were consciously separated into mono-functional areas. This has been informed by the desire to reduce conflict between activities and to maximise the functional operation of each separate activity. In Southern Africa, where the urbanisation process has been profoundly influenced by colonialism and (particularly in South Africa, Namibia and Zimbabwe) by apartheid (separate development), the concern with separation extended to race and class, with the poorest groups being furthest removed from urban opportunities.
- A deep-rooted belief in the power and ability of technology to overcome social and natural constraints and to transform the nature of society: it was the beginning of a brave new world. In an urban sense, perhaps the most pervasive form of this was the dominance afforded the motor car. The relatively unchallenged assumption was that every household would own a motor car, an assumption graphically captured by Henry Ford's claim that he would build a motor car so cheap that no one would be unable to own one and that all would benefit from hours of pleasure in the great outdoors.
- Paradoxically, the assumption remains entrenched in Southern Africa, where levels of poverty and inequality are extreme and it is patently obvious that the vast majority of households will never own a car.
- A fourth tenet informing urban settlement is not directly derived from modernism but from social movements such as the Garden Cities movement. This is a belief in the concept of the neighbourhood unit. In terms of this, numbers of dwelling units are grouped into

'neighbourhoods' or 'cells' which have community centres, commercial facilities located at their geographic hearts or centres. Movement systems are inwardly oriented towards these centres in the (naïve) belief that this will create a sense of 'village' or community.

These beliefs, taken in combination, ensure that three spatial patterns characterise settlement in Southern Africa: sprawl, separation and fragmentation. These, in turn, have severely negative impacts on society and nature.

- Relentless sprawl distorts the dynamic balance between the three landscapes of society (wilderness, rural and urban). Urban development rides rough-shod over environments of great beauty and ecological sensitivity.
- The system generates enormous amounts of vehicular movement at great cost in terms of capital investment in infrastructure, time and pollution.
- Travel expenses assume a disproportionate role in household budgets: the system directly aggravates poverty and inequality.
- The generation of greenhouse gas emission is increased.
- The grain of settlement is coarse, militating against the achievement of cheap, viable and efficient public transportation, and making walking and transportation an unpleasant experience.

B. Some Institutional Impacts of Modernism

Modernism has also impacted significantly on the nature of urban and transportation planning. It introduced an approach to planning that was based on a positivist, rational, comprehensive mind-set. Spatial plans were strongly programmatically driven and their focus was land use. In terms of this, idealized land use patterns are conceptualised, neatly separated and distributed in space. The approach is essentially quantitative. Space demands are 'scientifically' calculated on the basis of range and thresholds and a land use schedule is generated (x number of households can support y number of schools, clinics, square metres of shopping space, and so on). Planning then becomes the more or less rational distribution of the parts.

By placing land use central to spatial planning, which should be concerned with the quality of the urban whole, it reduces the discipline to a part or element. Inevitably, specializations around other elements or parts have emerged: environmental planning is concerned with the green system; transportation planning with movement; economic planning with issues relating to local economic development; and so on.

The planning process, therefore, becomes a competitive, multi-disciplinary one, with different disciplines seeking to maximise the part for which they are responsible, and decisions about parts of settlements are made in relative isolation from each other. In effect, settlements are being created from the bottom up. There is a great deal of emphasis on the parts but nothing holds the whole together. The truism that for the whole to work well no part can be maximised has largely been forgotten.

In this competitive planning process in Southern Africa, transportation planning has, for a variety of reasons, become the dominant sector. It has an enormous influence on the form the structure of emerging settlements.

III. SOME CHARACTERISTICS OF TRANSPORTATION PLANNING IN SOUTHERN AFRICA

There are four characteristics of current transportation practices in Southern Africa which have negative impacts on the urban settlements.

A. Maximising Mobility

Firstly, the focus is on maximising mobility (encouraging faster vehicular movement) rather than increasing accessibility (bringing

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 and urban opportunities into closer proximity, thereby reducing aggregate amounts of movement). In terms of this, the concept of the urban freeway, imported from the USA, has been warmly embraced, particularly in South Africa. This has manifested itself in two ways.

The first is that, in many cases, the freeway is seen as the primary structuring element of new growth. This has two interrelated and negative consequences. One is that freeways are frequently used to guide the path of new development: many city plans show networks of limited access routes extending into the undeveloped countryside, in the expectation of future growth, without serious questions being asked by desired future settlement forms and without appropriately understanding of the natural environment. Massive environmental desecration and loss of high quality agricultural land has occurred in this way.

The other consequence is that the practice promotes low density sprawl. Net densities in Southern African urban settlements are among the lowest in the world. Cape Town in South Africa, for example, is one of the few (if not the only) large cities in the world where net densities have actually decreased in the last 30 years. This has a number of very serious consequences. *Inter alia*:

- The settlement form is extremely inefficient in terms of capital infrastructural and operational costs;
- The system generates excessive amounts of (primarily car-based) movement and great cost in terms of finance, time, congestion, pollution, greenhouse gas emissions, and energy consumption;
- Densities are far too low to support efficient and viable public transportation;
- Densities are too low to create a vibrant local market, a precondition for small self-generated economic activity in a context where formal employment is very high.

In short, the system is simply non-sustainable. One of the great settlement challenges facing the region over the next few decades is restructuring towns and cities in order to make them denser, more urban, more efficient and more equitable.

The second manifestation is an emphasis on creating intra-urban limited access routes to improve mobility. In an urban structural sense, the impact of these routes is tantamount to creating walls across the city: activities on one side of the route are almost entirely unrelated to those on the other. When a number of these routes are created, the city is divided into a series of fragmented boxes: the smaller the box, the greater the degree of fragmentation. When these boxes are too small, the achievement of urban integration and permeability (preconditions for positive settlements) becomes impossible.

The provision of limited access intra-urban routes may be necessary (particularly for efficient freight movement) but they should be used sparingly. The clear implication is that the boxes they create should be as large as possible.

C. Investing in Road-based Transport as Opposed to Public Transport or Non Motorised Transport (NMT)

The second characteristic is that investments in public transportation continue to be outweighed significantly by road-based investments directed mainly at improving private vehicular mobility. There is no comprehensive database for this and it is clearly difficult to measure (it is difficult, for example, to separate the relative proportion of a road project which benefits mini-taxis or buses). Tentative evidence suggests, however, that the rates of investment in road-based projects, as opposed to public transportation projects, may even be increasing (Naudé, 2001). Certainly, Southern Africa is nowhere near the global ratio of 58.3% of investment in public transportation and 41.7% on roads (*ibid*).

The implications of this are serious, not only in terms of urban efficiency but also in terms of climate change. There is a growing recognition that there is a connection between climate change and

greenhouse gas emissions. Urban settlements occupy some 3% of the earth's surface but account for some 75% of greenhouse gas emissions. Road-based transport utilizing fossil fuels is a major contributor to this.

D. Demand-side Emphasis and Structural Distortion

The major instrumentation of transportation planning – particularly modelling – is demand-side based: future decisions are based on extrapolation of existing movement patterns and flows. In situations, where settlement structure has been historically distorted, such as Southern Africa, these practices serve to entrench that distortion. There little concern with how transportation planning can be used to restructure settlements and to promote new, more equitable movement patterns.

E. A Lack of Concern with Spatial Quality

A fourth characteristic of transportation planning is that it reflects little concern with spatial quality. This is an issue of profound importance. Movement networks account for the majority of public space in all cities.

The term 'public space' relates to all of the public spatial voids in cities (Dewar & Todeschini, 2004). These constitute the public rooms or seams of connectivity within settlements. In positive urban environments, all of these spaces operate as social spaces: they represent the primary, and arguably, the most important form of social infrastructure. They constitute the gathering places where people experience, both formally and informally, the public life which is the essence of cities.

While this is generally true, these spaces are particularly important in the lives of the poor, who constitute the majority of urban dwellers in Southern Africa. A defining characteristic of poverty is that people cannot carry out all, or even most, of their daily activities in private space. In these cases, the public spaces effectively operate as extensions to the private dwelling unit. These are the places where people meet and chat, lovers court, children play and scholars study when the house is overcrowded.

When these spaces are qualitatively good, they give dignity to an entire environment, regardless of the quality of buildings. Conversely when they are poor and hostile, the entire neighbourhood will be sterile. A characteristic of urban environments in Southern Africa is that they are almost ubiquitously very poor spatially and the movement network is a major contributor to this. This is manifested in two main forms.

IV. QUALITIES OF 'ROAD' NOT 'STREET'

The distinction between 'road' and 'street' is an important one. 'Roads' are engineered conduits to accommodate the movement of motor vehicles. 'Streets' are multi-functional linear spaces which accommodate many human activities, including a variety of modes of movement. The essential difference between the two is determined by how the edges of the space are made. Positive urban spaces have a number of characteristics: they are defined and enclosed; humanly-scaled (the relationship between height of the buildings defining the space and the width of the space is central to this); surveilled (human eyes over space is the central design issue relating to safety and security); and there is a clear transition or threshold from public to private space.

In Southern Africa, the ubiquitous feeling is that of road, not street. The primary reason for this is that the only design associated with the movement network is the application of engineering standards. No attention is paid to how the edges are defined. Commonly, with higher order routes, the circulation space is over scaled, through the widespread practice of the reservation of space in anticipation of future demand.

The widespread feeling of 'road' is a major factor underpinning the sterility of most Southern African urban settlements.

A characteristic of positive public spaces, including streets, is that they are uncluttered: the dimension of the surface of the space dominates. In Southern Africa, clutter (through the excessive use of engineering elements such as bollards) dominates. By far the major cause of this is the excessive and almost unquestioned use of kerbs as a device to manage storm-water run-off. At times, in the case of higher order routes in which run-off flows are heavy, kerbs may be necessary. In most other cases, alternative, far less intrusive ways of managing run-off can be found.

V. FACING THE FUTURE

A. Some Emerging International Dynamics

Southern African urban settlements will not be immune to international dynamics which will impact on towns and cities locally in coming decades.

There are an interrelated number of these which are becoming increasingly clear.

- Economic globalisation and structural unemployment. As the pace of economic globalisation accelerates and economic development re-orientates towards a knowledge economy, structural unemployment will increase. The developing countries, where educational levels are lower, will be hardest hit by this. The clear implication is that an increasing number of households will have no option but to create their own livelihoods through their own energies and ingenuity. There will have to be a much greater emphasis on local economic development – meeting local needs through the use of local resources and local skills.
- Climate change. There is increasing evidence that climate change is occurring and that it is being fuelled by human actions, particularly the generation of carbon and other greenhouse gases.
- Fossil Fuel Depletion. The world has now entered a stage of fossil fuel depletion. The clear implication is that the use of alternative energies must increase and that the amount of energy utilized, particularly on movement, must decrease.
- Food security. Despite global surpluses of food production, access to food by the poor is becoming an increasing problem, particularly in developing countries. While this is essentially an economic problem (the flooding of markets in the south by subsidized production in the north), it is likely to be exacerbated by climate change, particularly in drier regions such as Southern Africa.
- Water scarcity. Water scarcity is a serious problem in the dryer regions of the globe. It is already the cause of regional conflicts and the problem is growing rapidly.
- Sustainability. It is common cause that global consumption is already exceeding the earth's fair share index and that many cities are non-sustainable. Urban sustainability requires reducing the ecological footprint and the hinterlands of settlements, while maximising the use of renewable resources in terms of inputs; optimizing resource flows (particularly energy) in terms of throughputs, and finding ecologically sensitive and, wherever possible, productive (through recycling) ways of disposing wastes in terms of outputs
- Accommodating a growing number of the urban poor in a dignified manner. This is clearly more than simply the provision of housing and roads as it is interpreted in many developing countries. The quality of the public spatial environment is central to this.

Significantly, the implication of all these dynamics for the urban model which should be promoted is the same. The call is for settlements which are:

- Compact, with many of the inputs necessary being derived from the local region;
- Efficient, in terms of minimising greenhouse gas emissions;
- Relatively high density, to provide the necessary threshold for a vibrant local market, public transportation, essential social services and so on);
- Strongly mixed-use;
- Structured not by roads and housing but by public space and public institutions;
- Scaled to movement on foot, non-motorized transport and public transportation;
- Generous and innovative in terms of local food production and local water capture
- Vibrant and diverse in terms of small-scale economic activity;
- Geared to recycling or, where recycling is not possible, ecologically responsible in terms of waste disposal;

In short, the qualities required are almost precisely the opposite of those being generated in Southern African towns and cities. It is clear that fundamental restructuring is required.

B. Forging a Path Forward

To start along a more sustainable and responsible path, two fundamental changes are required.

VI. CHANGING FROM PROGRAMMATIC LAND-USE PLANNING TO STRUCTURAL-SPATIAL PLANNING APPROACHES

Programmatic land-use planning is entirely ineffective. It is based on the incorrect assumption that land-uses can be planned. They cannot. A land-use plan can only prevent activities from occurring at places. If there is no demand, it cannot make them happen. Land-use is an issue of land management, not forward planning.

Structural-spatial planning approaches are different from programmatic ways of thinking in a number of important respects.

Firstly, they are driven by a concern with the performance of the settlement as a whole, not by the maximization of the part.

Secondly, they are generated by an integrated interdisciplinary, as opposed to separate multi-disciplinary, processes. The integration of spatial and transportation planning is central to this.

Thirdly, their focus is not on land-use but upon the accommodation and celebration of human activities in space.

Fourthly, they do not seek to determine the spatial distribution of human activities directly, through autocratic top-down directives relating to land use zoning, but through manipulating the logic of access, to which all activities respond, in order to generate broadly predictable outcomes.

Finally, they do not attempt to define the 'good' urban life, applicable to all people, but concentrate on the creation of choice. In this way, the way of thinking is enabling, not prescriptive.

The concepts of structure and space are central to structural-spatial approaches.

Structure

Structure is the design device traditionally used in settlement-making to order the landscape. In terms of this, the main elements of public structure (green space, all modes of movement including walking, public urban space, social facilities and utility and emergency services) are manipulated and co-ordinated to create a geometry of point, line and grid. The geometry generated by the way in which these elements are brought into association creates a logic to which all activities, large and small, formal and informal, public and private, respond in their own interests.

The Role of Movement in Structural Approaches

Understanding the spatial logic of structure lies in the concept of access. In effect, the geometry created through the co-ordination of the public elements of structure generates an 'accessibility surface' across landscapes: it creates a reference system of points and lines of greater or lesser accessibility. Further, the system is an hierarchical or differentiated one: it creates different levels of access to different types of opportunities (greater or lesser access to green space, for example, is defined by the relationship of land parcels to the pattern of green space.)

Equivalently, every urban activity has its own logical requirements in terms of access. These must be respected to ensure the efficient and viable operation of the activity. Decision-makers relating to these activities are constantly seeking to optimize these requirements in locational decisions.

At the most fundamental level, these logical requirements relate to variations in the needs for publicness (exposure) or privacy (secretiveness). All activities have requirements in terms of these and seek to optimize them as far as possible in a competitive process with other decision-makers. It follows from this that the more complex the accessibility surface, the greater range of choices offered to decision-makers. Conversely, the more simplified the structure, the greater the tendency for highly accessible locations to be appropriated by the strongest players requiring exposure, to the exclusion of all others.

The structural system therefore, establishes a logic of exposure and privacy to which any activity can respond. It is through this structural system that rich choices are offered, without imposing particular forms of life-style for everyone. The system is not dependent on judgments about what constitutes the 'good urban life, as is the case in programmatic approaches. It simply creates choices: the richer the range of choices, the better the system. In this way, it allows people to self-actualize. In primarily residential areas, for example, real choice does not relate to architectural style or issues relating to how the dwelling is organized or designed: rather it relates to choices in lifestyle, from very private (and frequently somewhat less convenient) living to very public, intense (and more convenient) living. This way of thinking, then, does not deal with 'either-ors' (either access to the private green space of suburbia and almost no convenience, to the extent that people are forced to spend many hours a day in cars ferrying children, or public living with no access to green space), as tends to be the case with the current suburban model, but with degrees of choice, within limits.

Space

In the same way that it is possible to create a hierarchy of access, it is possible to generate an associated hierarchy of public spaces. In structural-spatial approaches, all public space is seen as social space (it is not residual space). This has been one of the great failures of modernism: the movement elevated the free-standing object (the building) as the focus of design attention over all else and, in the process, fragmented much of the public environment.

The hierarchy of public spaces creates a logic for the location of public facilities. In heterogeneous societies this established the 'good manners' of design. Facilities which are shared by all take up the most prominent locations on, or even in, the space. Group-specific facilities adopt structurally equivalent positions close to, but not on or in, the space.

Design is the creative integration of these different forms of hierarchy (the hierarchy of access and the hierarchy of space) into frameworks (not comprehensive end-states) that create a logic of publicness and privacy within which all activities, large and small, formal and informal, can find a place in terms of their own requirements for accessibility. At the same time, the spatial quality of the framework contributes directly to the quality of the environment and of life. In this integrative process, the ordering concept (the idea) is sympathetically moulded to, and informed by,

the landscape (the context). This moulding warps and distorts the idea, thereby giving it richness and life, but it may not destroy it.

The Significance of Minimalism

Central to this way of thinking, therefore, is the search for minimalism. At each scale, structural-spatial plans should provide the minimum strong actions necessary to give direction, while allowing maximum freedom for the ingenuity and creativity of both designers and decision-makers to enrich the emerging reality.

A hallmark of positive environments is that they are complex. Complexity, however, cannot be designed – it results from process. There are three main reasons why minimalism is necessary. The first is that it is the attribute that allows plans to deal with the unexpected. The second is qualitative. Sterility and monotony are the inevitable consequences when the design process is dominated by the ingenuity and creativity of too few people, regardless of how talented they may be. The larger the project, the truer this is. It is necessary, therefore, in the words of David Crane, to create ‘the city of a thousand designers’ (Crane, 1960). The third is that processes of urban development have always offered opportunities for income generation. It is imperative, particularly, in the context of developing countries, that these opportunities are spread as widely as possible over society and, particularly include the small-scale developer. Positive plans, therefore, should be plans of process. The plan needs to release land in such a way that a wide range of actors can be incorporated into the process.

VII. MAKING URBAN CORRIDORS THE FOCUS OF SPATIAL AND TRANSPORTATION PLANNING ATTENTION

While there is an urgent need to begin to use new development to restructure and intensify Southern African cities, this cannot occur everywhere. If it is to achieve its objectives, intensification must be structurally and strategically driven. It is argued here that making urban corridors the focus of spatial and transportation planning is a useful way of operationalizing this.

The Nature of Corridor

Corridor planning is an approach which seeks to promote intensity, to encourage non-motorized and public transportation, to stimulate a mix of activity, to promote small business, to pursue urban integration vigorously and to improve equity and convenience.

The concept of urban corridors is not new. Corridor formation (the tendency for more intensive activities to agglomerate in linear forms, in association with more continuous movement routes) can be observed in most parts of the world, particularly where there has been freedom for activities to respond directly to patterns of access. However, the phenomenon has been actively discouraged in many parts of the world, including Southern Africa, since the modernist urban paradigm became entrenched in town planning. There appears to have been three major reasons for this. One is that a central precept of the modernist model was the promotion of land-use separation and corridors are the opposite of this. By definition, they are intensively mixed-use zones. A second is that a central concern of modernism was with increasing mobility and the relatively unfettered flow of vehicular traffic. Corridors are more about promoting accessibility than mobility. A third factor was a concern about ribbon development. The concern about this began in the UK in relation to inter-town development: it was a regional concern. However, the concept of discouraging development along more continuous routes was un-problematically (and erroneously) applied to intra-urban routes in Southern Africa and was entrenched in law. With hindsight, it is apparent that all of these concerns were wrong and cities’ performance has suffered greatly because of this. It is time to reverse this way of thinking.

A concern with the promotion of corridors is not, in the first instance, a transport concern (as it has been promoted in places like

Vol. 5, No. 5, 2011 Brazil – here, a thin band of high rise housing has been inserted along public transportation routes in order to increase the viability of public transportation), although public transportation is an important part of any corridor project. As used here, the term ‘corridor’ refers to an urban corridor. It is an urban, not a transportation, issue. It represents a broad (commonly, at least a kilometre wide) band of mixed use activity continually intensifying around one or, more commonly, an hierarchically interlinked system of transportation (including public transportation) routes or spines of different degrees of continuities.

More continuous transport routes in urban areas represent energy flows. They carry flows of people and finance and it is to these that more intensive activities (activities requiring public support) respond locationally. They are lines or places of high accessibility and therefore energy. These flows, in turn, represent markets for goods and services, including social services to which both the public and private sectors can respond. The greater the volume of movement along a route, the greater is the potential market. The potential of the market at any point, therefore, is a consequence of three factors: the number of people in the local areas served by the route; the volume of through traffic; and the combined income of all these people.

In effect, since the continuous routes ‘tie’ together a number of local areas through which they pass, they are integrators: no one area is entirely dependent on its own resources to provide support for more intensive activity and facilities. Local areas ‘lean upon’ each other in a symbiotic way. In this way, the corridor can be used as an integrator to break down introverted neighbourhood cells.

The idea of linear corridor is not the opposite of nodal or point-related development. Intensive activities almost never occur evenly along the spine of the corridor. They tend to agglomerate or cluster according to the relative accessibility of points along it. The common pattern, therefore, is one of ‘beads on a string’ with different activities tending to grow towards each other over time.

Commonly, too, the corridor tends to be made up of an hierarchically differentiated system of larger and smaller corridors; smaller corridors aligned with less significant but still relatively continuous routes, frequently exist and interpenetrate with the main spine. These smaller corridors essentially respond to NMT traffic flows. To increase this generative capacity, it is therefore sensible to reinforce and increase these flows by placing generators of NMT movement (particularly schools and other social services) on, or near, these routes. These smaller routes should also be the target of NMT investment programmes, in order to make walking and cycling as pleasant as possible.

Thus far, the discussion has focused on individual corridors. However, the same concept can be used as an instrument of larger city planning, whereby the city as a whole is ordered around an interlocking system of large corridors.

Given these dynamics, it is sensible to make these corridors the subject of both economic and spatial planning attention. Commonly, corridor initiatives involve a number of different kinds of projects:

- Land rationalization projects: securing control over un- or under- utilized land within the corridor for project purposes;
- Housing infill projects: intensifying the corridor through higher density housing or mixed-use projects, on relatively small parcels of land on an on-going basis;
- Provision of public facilities such as schools, clinics, libraries, and so on;
- Public transportation projects: the promotion, improvement and modal integration of public transportation;
- Non-motorized transport (NMT) projects: promoting NMT by using public investment to make walking and cycling as safe and pleasant as possible;

- Public spaces programmes: public investment to increase the quality of the public spatial environment;
- Emergency service programmes: making the corridor as safe as possible through the provision of police, fire fighting and ambulance services;
- Local economic development programmes: programmes aimed at increasing economic comparative advantage and at meeting local needs through local skills using, wherever possible, local resources.

Some Advantages Stemming From Making the Corridor a Focus of Planning Attention

Several advantages flow from making the corridor a unit of planning attention:

- It is an effective form of decentralization since thresholds and patterns of accessibility are automatically co-ordinated. It assists in reducing aggregate movement and thus carbon emissions;
- Along any one route, there are always points of greater accessibility (cross-over routes, public transportation stops and so on). Land prices tend to be higher at these points and they are commonly appropriated by larger, more competitive activities. However, the range of land prices occurring within a corridor ensures that all activities, with very different rent-paying capabilities, can find a place in the system;
- Linear systems enable larger and smaller activities to establish a symbiotic relationship: larger enterprises, which are the primary generators of movement, commonly appropriate the most accessible locations but smaller activities, which do not have a great generative capacity on their own, can adopt interceptor locations in relation to the flows generated by the larger activities: they feed on the 'crumbs off the table'. This makes corridors well-located to play an incubator function for micro-enterprises;
- Because of the range of conditions within the corridor, it discourages the tendency for spatial monopolisation by very large activities and thus discourages land speculation;
- Linear systems tend to handle growth and change well. Activities can change relatively quickly and easily (for example, from residential to commercial and vice versa);
- More intensive activities are automatically coordinate with public transportation, since the more continuous routes, which form the spines of the corridors, are the channels along which public transportation logically moves. The system thus promotes equity of access;

Linear systems allow places of great residential secrecy to occur in close proximity to more intensive activities: the system promotes convenience;

- Corridors are effective mechanisms for breaking down urban fragmentation and increasing integration: they can be used to tie many local areas into an integrated system;
- A focus of corridors as a spatial focus of urban planning automatically ensures that integrated planning occurs across jurisdictional boundaries, if this is required;
- Because corridor initiatives involve a wide range of different projects, they are an effective means of co-ordinating the budgets of different line functions and between different spheres of government.

VIII. CONCLUSION

Southern African towns and cities are amongst the most inequitable and inefficient in the world. The direction of required change is clear. There is an urgent need to restructure and intensify these settlements to make them more sustainable. However, it is impossible to pursue this as long as spatial and transportation planning are seen as separate processes and as long as programmatic forms of plans remain dominant. It is necessary to develop structural-spatial plans to order future development. It is also suggested that making urban corridors the focus of planning attention is a useful way of both restructuring and of bringing insights from both the spatial and transportation planning disciplines together into a single process.

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