Spatial development frameworks on a broader scale: An integrative approach

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Abstract

Recent exposure to a number of spatial development frameworks on a broader (district and regional) scale in South Africa indicates that there is considerable confusion as to what should be the content of these plans. In addition, many fail to pay any attention to some of the most pressing developmental issues which are emerging.

This article argues that regional planning in South Africa has always been based on, inter alia, four central pillars (environment, economic development, settlement and service provision), which need to be informed by insights drawn from a number of disciplinary perspectives. It identifies some of the main developmental challenges in each of these disciplinary areas which these plans should be addressing, provides some disciplinary-specific insights into them, and then demonstrates an integrative approach to link these divergent issues.

RUIMTELIKE ONTWIKKELINGSRAAMWERKE OP GROTER SKAAL: 'N GE-ÏNTEGREERDE BENADERING

'n Onlangse ondersoek van 'n aantal ruimtelike ontwikkelingsraamwerke op 'n hoër beplanningsvlak (naamlik distrik- en streekskaal) in Suid-Afrika dui daarop dat daar oorweldigende verwarring oor die inhoud van die voorgenome planne bestaan. Bykomend, verwys baie van die planne nie eers na die belangrikste nuwe ontwikkelingsvraagstukke wat onlangs na vore gekom het nie.

Die artikel gaan vanaf die standpunt uit dat streeksbeplanning in Suid-Afrika op vier pillare (insluitende omgewingsaspekte, ekonomiese ontwikkeling, nedersettingspatrone en diensteverskaffing) rus. Hierdie aspekte moet belig word vanaf insigte gereflekteer deur 'n wye aantal dissiplinêre beskouings. So 'n benadering identifiseer sommige van die belangrikste ontwikkelingsvraagstukke in elkeen van die dissiplines wat aandui wat hierdie planne moet aanspreek, belig sekere dissiplinêr-spesifieke inligting van belang, en verwys na 'n geïntegreerde benadering om hierdie uiteenlopende sake in noue verband met mekaar te bring.

CHEBISISO EA MORALO OA TWELOPELE EA SEBAKA KA BOPHARA: KA LEIHLO LA LEANO LE KOPAHANETSOENG

Kamora ho shebana le meralo e mengata ea tswelopele ea moralo ka bophara, e leng ditereke le mabatowa a Afrika Boroa haufinyane, ho bontšahala ho na le pherekano e kholo mabapi le hore na ho be le eng ka hare ho meralo ena. Ka holima moo, ba bangata ba hloloa ke ho bona tse ding tse bohlokoa, tse hlahellang ka taba ena ea tswelopele.

Atekele ena e loanela taba ea hore merero ea meralo ea mabatowa naheng ea Afrika Boroa, hara tse ding, e sebetsa ka mekolokotoana e mene ea bohlokoa(Tikoloho, Tswelopele ea Moruo, Bodulo, le Phano ea Ditshebeletso) tseo tsebo ea tsona e hlokang ho tsoa ho mehopolo e mengata e khethehileng. E bontsha tse ding tsa diphephetso tse bohlokoa tsa tswelopele hara mehopolo ena e khethehileng, eo merero ea tswelopele e hlokang hore ebe e tobana le eona, e ntano fana ka lesedi la hore mehopolo ena e khethehileng e ntlafale, ebe e fana ka mokhoa oa hore merero ena e nyallane e sebetse joaloka ntho e le ngoe.

1. INTRODUCTION

In South Africa, it is now a statutory requirement for governmental agencies to produce spatial developmental frameworks at local, metropolitan and district municipality levels (South Africa, 2000) and, indeed, at provincial level (South Africa, 2012). A review of a number of recently produced plans on a broader scale (district and provincial plans – subsumed under the term 'regional frameworks', in this instance) reveals a number of serious weaknesses. These include:

- A tendency to focus on land use (over which spatial frameworks, in fact, have little control), as opposed to giving strong direction to capital expenditure – in practice, many of these plans are hardly useful in informing budgets.
- Many concepts (such as regional development corridors) are appropriated from an urban context, while their relevance at a regional scale is dubious.
- They often make policy recommendations about issues which require attention on the finer scales and over which they have little control at the large scales.
- They are strangely silent about emerging tendencies which are central to the future of the country, such as increasing structural unemployment, global warming and climate change, food security, water scarcity, and so on.
- They are frequently almost entirely uninformed by theory and are not presented as defensible arguments, but as opinions.

The focus and emphasis of regional spatial planning in South Africa (and in most other national contexts) has tended to change over time, in response to changing national political economies and changing international paradigmatic perspectives (Dewar, Watson & Todes, 1986: 5-7, as well as a review of events since that time). A constant factor, however, is the presence of four interrelated disciplinary areas, namely

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environment, economic development, human settlement, and social and utility services provision. Indeed, it could be argued that the art of regional spatial planning frameworks lies in bringing these into symbiotic association.

The central purposes of this article are two-fold. The first is to identify some (and no attempt is made to be comprehensive) of the main development challenges within these core agendas. The second is to suggest a number of insights gained from different disciplinary perspectives which are important in considering these and to show a way of integrating these.

2. CORE AGENDAS

2.1 Environmental agenda

Pursuit of environmental integrity lies at the core of the environmental agenda. Both the function and experience of the environment are important in regional development. Function involves understanding natural processes in functional terms, ensuring that human activity occurs within, and respects a framework of widely accepted ecological principles. Experience shows how landscape as place is socially constructed and experienced. These functional and experiential aspects are interrelated and both involve ecosystem goods and services.

At a regional level, a fundamental quest of both aspects should be to maintain a dynamic balance between the three basic landscapes of society, namely wilderness (pristine natural areas), rural and urban. A major problem in many parts of the country is that urban and (particularly in customary areas) rural sprawl is riding roughshod over wilderness and rural landscapes, at great cost in terms of the loss of productive agricultural land and the destruction of amenity.

Figure 1 (Dewar & Louw, 2009: 2e) shows that it is useful to consider four landscape zones, namely wilderness, extensive agriculture, intensive agriculture and urban. The intensive agricultural or peri-urban zone is a zone of increasingly intense small-scale agriculture, made possible by the close proximity of small farms to urban markets (thereby reducing distribution costs) and by the easy and productive disposal of urban wastes (such as adequately treated 'grey water' and biodegradable wastes) for irrigation and fertilizer purposes into this zone.

Figure 1 shows, diagrammatically, the idealised relationship between the three landscapes of society, namely wilderness, rural and urban. It provides an image of what planners should be seeking to achieve, to gain maximum synergies between the landscapes.

It follows from this that the primary regional spatial framework decision is not where development should go, but where it should not.

The answer to this cannot be opinion, as is all too often the case in regional frameworks; it requires rigorous McHargian-informed methodologies and analyses concerning defensible criteria relating to the natural environment, the cultural landscape, historical investments in infrastructure and existing patterns of settlement to produce and map comprehensive constraints and informants (McHarg, 1969). This can then be interpreted to identify 'no-go', 'tread lightly' and 'development possibility' zones.

The second environment-based issue is the reduction of ecological footprints of settlements, and the need to reduce the areas over which settlement inputs are secured. This involves, *inter alia*, the mobilisation of local resources over the area (for example, promoting local food production to contribute to food security, reducing energy emissions in terms of settlement inputs (important in terms of climate change), local water capture, promoting local forms of energy, and so on).

2.2 Economic agenda

This agenda involves the pursuit of both economic growth and distributional issues. From an economic growth perspective, the central spatial issue is achieving efficiencies in terms of settlement patterns, ecosystem goods and services, and service provision. This may involve the use of policy incentives to encourage growth in particular areas, but this cannot occur if the preconditions for growth are not in place – there is a long history which shows that economic growth in particular places cannot be forced. Tietenberg (2003: 542), however, correctly reminds us that distributional issues are equivalently important: growth in per capita national income does not automatically result in improvements in regional welfare. Indeed, the issue of whether growth or distributional issues should lead policy intervention is one of the great and

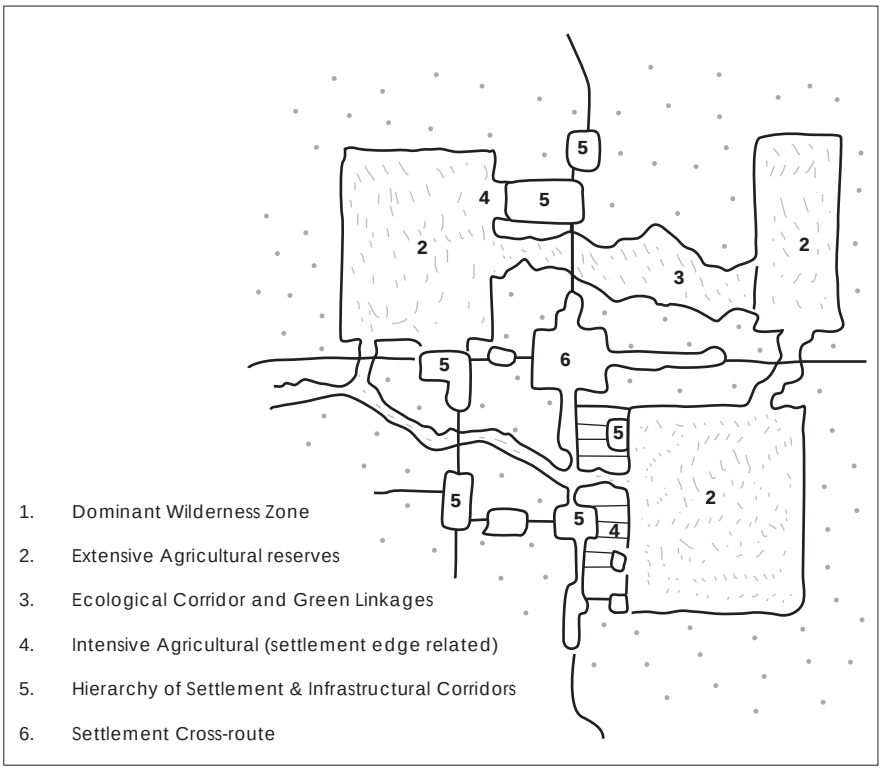

Figure 1: Maintaining the balance between landscapes
Source: Dewar & Louw, 2009: 2e

ongoing paradigmatic debates in the field of regional planning.

The renowned French economic historian Braudel (1984: 589-591) emphasises the distinction between balanced and unbalanced (or uneven) growth. He stresses the distinction between 'what makes growth possible' and 'the way it actually happens'. In his view, growth potential lies in 'balanced' settlements which is only acquired slowly, through continuous interaction of different factors and agents of production, by the transformation of the structural relations between land, labour and capital, the market, the state and social institutions. This is inevitably a long-term matter.

The 'way in which growth actually happens' is a question of more immediate circumstances of comparatively recent timespans, of particular conditions, of technical advances, of national or international opportunity, or even of pure chance.

Braudel argues that, for sustained growth to occur, long-term factors – the forces that accumulate and underpin progress over time – must already have produced whatever it is that makes economic growth possible and, every time an obstacle is encountered, there must be new sources of dynamism waiting in the wings to take over from the one that is running out of steam. His argument implies a caution about sectoral targeting or chasing trends in regional economic planning. Rather, the primary task is setting up the preconditions for long-term growth. The principle of economic diversity is central to these preconditions.

Braudel (1981: 23-24) defines the economy of capitalist nations as three forms of social organisation. First, the non-market or subsistence economy ('material civilization') is an elementary basic activity that has occurred everywhere, an economy of self-sufficiency and barter of goods and services within a very small radius.

Second is the market economy, which controls the great mass of transactions in regional space. This is a competitive sector comprising small or medium-sized independent firms or manufacturing units.

Thirdly, he identifies 'active social hierarchies that were constructed above the market economy', which can manipulate the economy to their own ends and disturb the established order. These include large corporations, multi- and transnational enterprises, with considerable power in terms of price-fixing and international trade.

The distinction is a useful one in South Africa currently, where all three strata are in operation. He reminds us that all three economic circuits require space in which to operate.

Spatially, the structure and dynamics of the space economy are underpinned by the concepts of competitive and comparative advantage. These are complex and dynamic concepts that go beyond space, but spatial access (whether to markets, raw materials, labour or capital) lies central to them. Significant changes in technology or pricing of movement almost always result in significant changes in the space economy.

2.3 Human settlement agenda

Settlement – the relatively permanent human occupation of the landscape – has long been an important dimension of regional planning. Settlement planning has, at its core, direct and indirect interference in the settlement system in pursuit of economic, social, political or environmental goals. It primarily involves changing relationships in the size and spacing of settlements.

Three concepts, all drawn from central place theory, are key to understanding hierarchical distributions of settlements in space.

The first is threshold. Threshold is the minimum level of support necessary to bring a good or service into being and to sustain its viability.

The second is range. Range is the spatial expression of threshold. It has two limits: an upper limit defined by maximum distance people are prepared to travel in order to experience or obtain a good or service, and a lower limit defining the area within which the minimum threshold is contained. Range, therefore, operationalises the concept of hinterland.

The third concept is the order of a good or service. It recognises a strong hierarchical dimension to goods and services. Higher order goods have larger thresholds, are obtained relatively infrequently and are more expensive than lower order ones. The lower limits of range for higher order goods and services are therefore much greater than lower order ones, which are cheaper and which are required more frequently.

The three concepts taken together explain why there is a strong hierarchical tendency in the spatial distribution of settlements in national and regional space, with a small number of larger settlements servicing much larger (frequently national or international) hinterlands and, therefore, being spaced far apart. These larger settlements, in turn, are served by a greater number of small ones which have clusters of still smaller ones around them. Central to this explanation, therefore, is access. More accessible settlements have a greater propensity for growth, since they are accessible to larger hinterlands.

These patterns, of course, are not static. They are constantly changing in response to external economic, political or social circumstances. Certainly, spatial access alone is not sufficient to explain settlement size distributions in regional space. Nevertheless, it is an important and relatively constant factor.

Two issues relating to settlement size and spacing are likely to require innovative thought in the near future in South Africa. The one is the development of new settlement networks to reinforce land redistribution and small farmer programmes. Figure 1 suggests that the place to carry out these programmes is not in the deep periphery, but in the intensive agricultural or peri-rural zones close to established urban markets.

The second settlement issue is that found in many of the areas under customary jurisdiction. In this instance, there is no urban settlement system, in the conventional sense. There is simply unremitting rural sprawl, at densities which are too low to promote intensification occurring at particular points and which make the viable provision of conventional forms of services almost impossible. The challenge is to promote the conditions for spontaneous densification to occur, perhaps by the clustering of publicly provided services.

2.4 Social and utility services agenda

Spatially, the provision of both social and utility services is also governed by the concepts of threshold, range and hierarchical order of services, with higher order services requiring greater levels of support than lower order ones. In considering services, it is useful to distinguish between two types

of services: linear (which frequently corresponds with utility services) and point-related services.

Spatially, the most significant linear service is movement. Movement routes are major informants of the accessibility surface in regional space: places close to regionally significant routes are more accessible than those further away. As a general rule, the more continuous (and higher order) the route – the more local communities and, therefore, the greater number of people it integrates and serves – the greater its structural power, defined in terms of its ability to attract more intensive activities requiring public support (Dewar & Todeschini, 2004: 49).

Accessibility, however, is not only expressed in lines. Where regional routes meet or cross over, a hierarchical pattern of points of accessibility is created, with the intersections of higher order routes generating higher order points of accessibility than intersections with more local ones. In this way, the regional landscape can be conceptualised as an accessibility surface: an undulating pattern of lines and points of hierarchically greater or lesser accessibility. Between these lines and points, accessibility is defined in terms of how far places are from more significant points and lines. It is this accessibility surface or web which is the primary locational informant of both economic activity (the space economy) and human settlement.

Linear services should also be, but are often not, strongly informed by the principle of reinforcement. Thus, for example, the developmental potential of water provision is far greater when it is associated with power and movement than it is on its own. For this reason, linear services tend to cluster together (Figure 2): they form potential investment lines in regional space and the association of these lines makes up a regional network (Dewar, 1985: 53). Unsurprisingly, the geometry of the network is informed by the pattern of settlement and new settlement, in turn, responds to the network.

The provision of point-related services is similarly driven by concerns of equity, resource efficiency and ongoing viability. The challenge is to ensure that each new tranche of public investment satisfies the greatest amount of unserved need: in effect, closing down regional space over time (Figure 3).

There is a strong hierarchical dimension to social service provision, with higher order services requiring larger thresholds. The levels of hierarchy are vertically linked. Thus, for example, in the case of health, medicines are transferred down the hierarchy, while patients are transferred up.

There are two conceptually different, but non-mutually exclusive, approaches to service provision. The one is bringing people to services. Services are provided (usually at agglomerated settlements, since thresholds are higher there) and people from the hinterland travel to them. In these instances, it is obviously sensible to cluster different types of services in order to maximise multi-purpose trips.

The other is taking services to the people. In contexts where (usually rural) densities are too low to make permanent services viable, it is necessary to mobilise the principle of time (of periodicity). Periodic services move through regional space, frequently associated with periodic markets (Figure 3).

Obviously, the pattern of provision of point-related services is strongly informed by the investment network: utility services are a pre-condition for the effective provision of point-related social services.

In large parts of South Africa, there is little coordination between different forms of linear services or between line and point-related services. This is largely because decisions about different services are made in different line function department silos, with little communication between them. It is a seminal role of regional spatial frameworks to provide this coordination.

3. TRACING THE CONNECTIONS

Clearly, these four central thrusts of regional planning (environmental, economic, settlement and services) are closely interrelated. Thus, for example, environmental factors (particularly

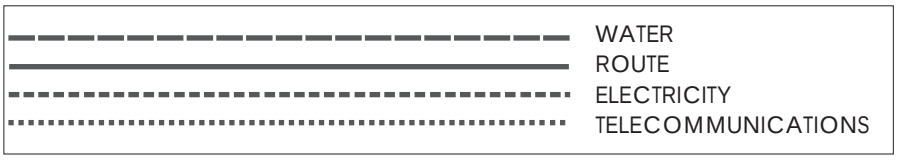

Figure 2: The concept of the regional investment line. The potential impact of any service is strongly increased by its integration with other services.
Source: Adapted from Dewar & Kiepiel, 2004: 49

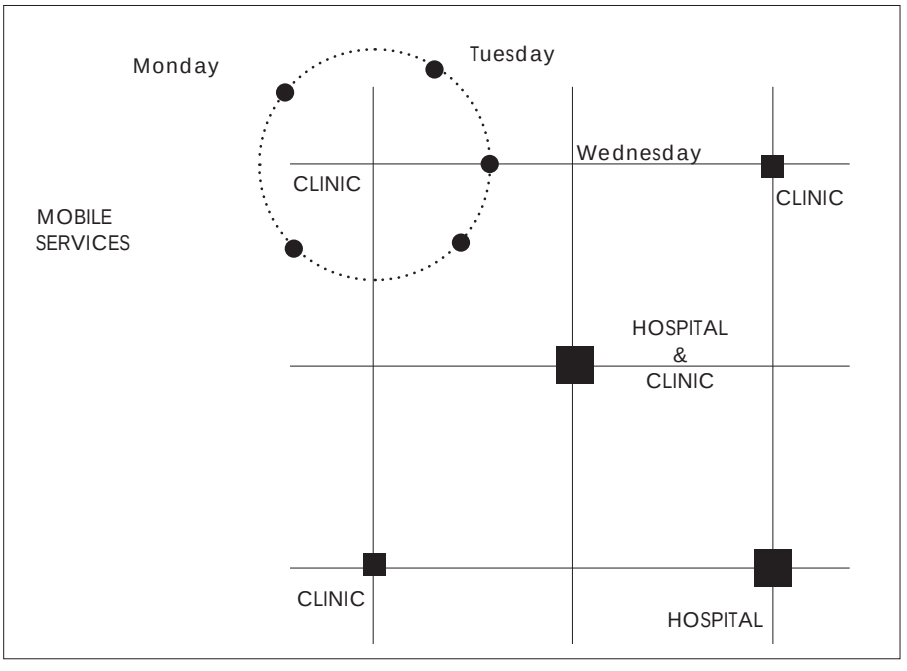

Figure 3: Hierarchical investment network made up of both line and point-related coordinated services
Source: Adapted from Dewar & Kiepiel, 2004: 50

resource distributions) may generate economic activity and thus, in turn, attract settlement. Conversely, other ecosystem services such as carbon fixing depend on extensive natural areas.

At a macro-level, the landscape may create barriers which profoundly distort time-cost relationships and thus patterns of settlement. Variations in accessibility underpin landscape character variances that may support tourism forms with differing accessibility requirements (broadly, urban, rural or wilderness tourism). At a micro-level, environmental factors affect the positioning of settlement on the landscape and different environmental conditions generate different service cost structures.

Primary economic development is fundamentally affected by resource distribution. Except for resource-based tourism, secondary, tertiary and quaternary economic sectors almost ubiquitously occur in agglomerated settlements, in order to capitalise on thresholds, economies of agglomeration and economies of scale. In addition, a pre-condition for economic development is the availability of both line and point-related services.

Settlements are informed, at both macro- and micro-scales, by the characteristics of landscape. Furthermore, to be viable, all settlements need an economic base. A useful distinction, in this instance, is that between basic and non-basic goods and services. Basic goods and services are those that are supplied to the hinterland of the settlement or exported beyond. In the case of many settlements, it is these which initially brought the settlement into being and determined its location in regional space (central places). Non-basic goods and services are those directed at the population of the settlement itself. Both basic and non-basic services are a pre-condition for the survival of settlements.

Services (both point and line services) are pre-conditions for both economic development and settlement formation. In many regions, particularly in low-density contexts in developing countries, linear services become agents of settlement formation themselves – people shift locations towards them both in order to gain access to the services themselves or because these investment corridors, commonly linking a number of agglomerated settlements, are the only zones accessible to external markets for very small economic surpluses (Dewar, 1985: 21).

Spatially, the common factor that ties these four thrusts together is that of access.

4. BRINGING THE THRUSTS TOGETHER

How can these different theoretical thrusts be connected? The starting point is to return to a dynamic balance between the landscapes of society, namely wilderness, rural and urban. The central question, in this instance, is not where urban development should go (which is the dominant approach at present) but where it should not. It begins with the identification of non-negotiable wilderness and rural areas. The question concerns how these relationships can be conserved in regional space.

The theory of island biogeography is a useful starting point. Lyle (1999: 216-218) argues that, all other things being equal, the following applies:

- Wild (or wilderness) zones should be as large and contiguous and as close together as possible; one large preserve is better than several small ones of equal total area, except where particular species requirements or habitat qualities create exceptions.
- Where areas characterised by extraordinary habitat environments are in locations which are extremely limited in their extent by surrounding uses, the need for wild patches, enclaves and corridors become essential.

Figure 4a, b and c play out the implications of this (Dewar & Kiepiel, 2004: 51). In Figure 4a, the intersection of the two linear systems results in the urban and agricultural components being completely encircled by the primeval component. The pattern results in ecological tenets overriding urban or agricultural requirements.

Figure 4b is the opposite extreme in which urban and agricultural concerns override the primeval component in four places along the route.

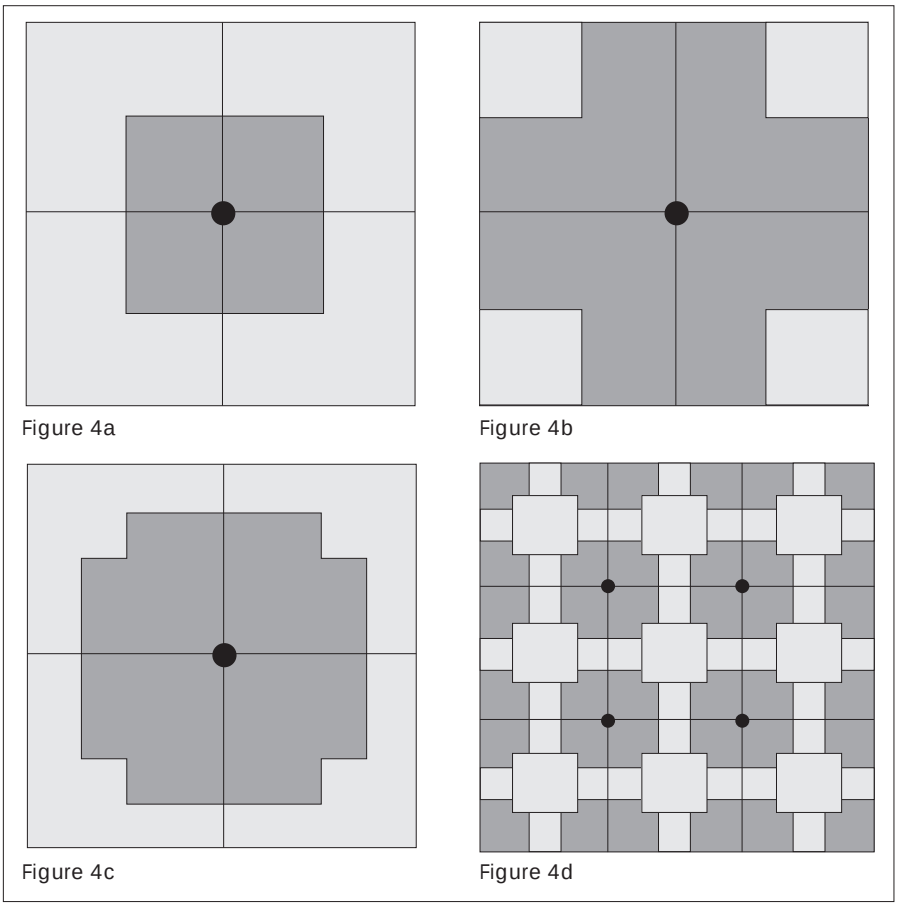

Figure 4a

Figure 4b

Figure 4c

Figure 4d

Figure 4: The network of landscape character zones, showing how different configurations meet desirable objectives to different degrees. Figures 4c and 4d reflect optimal patterns.

Source: Dewar & Kiepiel, 2004: 51

Figure 4c shows linkage of blocks of primeval land with ecological corridors. This spatial organisation is consistent with the ecological tenets and minimises land uptake in the urban and rural components. It is theoretically the optimum solution to balance in an undifferentiated landscape.

The second element of the model is co-ordinating the investment line and network with major existing settlement patterns. This creates a framework for future public investment in both urban and rural regions, as opposed to the reactive responses to (often distorted) historical patterns of settlement. This framework guides future settlement formation and is likely to lead to voluntary adjustments over time to existing (and frequently distorted) settlement patterns, as demand to gain proximity to the framework increases. The framework creates the pre-conditions for future economic development and its logic accommodates the needs of both large and small enterprises. Within this framework, more sectorally based policies may be pursued.

Figure 4d shows how the system comes together as a totality over a large regional landscape.

5. CONCLUSION

There are strong indications in many recently formulated spatial development frameworks on a broader (district and regional) scale in South Africa that there is considerable confusion concerning what the content of these plans should be, and the central issues they should be addressing. This article attempted to identify some of the major issues and to illustrate a way of thinking, incorporating insights from a number of disciplinary perspectives, which brings some of the central pillars of regional spatial frameworks (environment, economic, settlement and service provision) into association. It is argued that this integration is essential for a regional approach which acknowledges the full range of people's constitutional rights.

The argument has been played out in this article at one scale only. The way of thinking, however, is also appropriate at much finer scales.

Above all, however, the article is a plea for regional planning to take its rightful leadership role in framing the broader scale spatial development agenda, as opposed to simply being a part of the reactive pattern of public investment which is occurring at present.

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