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**Ports, port cities and coastal zones:
development, interdependence and competition
in East Africa**

by

Brian HOYLE

KONINKLIJKE ACADEMIE VOOR OVERZEESE WETENSCHAPPEN

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FOREWORD

This memoir is based on a study awarded the Prize for Port Studies General Manager Fernand Suykens by the Royal Academy of Overseas Sciences, Brussels, Belgium, in 1995. I am grateful to the Academy for the award of the prize, as an acknowledgement of my contribution to the study of seaports and development over many years, and as an indication of the significance attached by the Academy to the study of ports and port cities and to research in less-developed countries.

The research from which the memoir is essentially derived was begun in the early 1960s and has been continued at intervals over more than three decades. From my base at Makerere University, Uganda, I travelled on numerous occasions in the 1960s through Kenya and Tanzania. I am grateful to the late Professor Kenneth Baker (Makerere University) and to the late Professor James Bird (at University College London, and later at the University of Southampton) for stimulating and guiding my early interest in East African affairs and in problems of port development. More recently I have revisited East Africa on numerous occasions from my home port city and University of Southampton, and I acknowledge the financial support of the Nuffield Foundation, the British Academy and the University of Southampton which facilitated further investigations and numerous publications.

Many members of the staff of the Kenya Ports Authority and the Tanzania Harbours Authority, too numerous to mention individually, have provided information, facilities and stimulating discussions on innumerable occasions over the years.

Material submitted in the competition for the Suykens Prize may be based wholly or partly on previous publications, the idea being to acknowledge contributions to a field over a period of time rather than to highlight a specific original new paper. In this context, the present memoir draws upon and to some extent re-interprets material contained in various earlier publications by the present writer listed in the references. Specifically, figure 2 is reproduced by permission of John Wiley & Sons Ltd. from HOYLE *et al.* (1988); and figure 12 is reproduced by permission of the Editor of the *Journal of Transport Geography* from HOYLE & CHARLIER (1995).

Brian Hoyle
Southampton, 1996

SUMMARY

This memoir considers the significant role of port cities in the politico-economic evolution and modern development of Africa, emphasising an holistic approach towards the African cityport by focusing upon the port-city interface. The second part of the memoir focuses upon past and present relationships between cityports and coastal zones, using the example of Mombasa (Kenya) to illustrate the argument. In the third part, attention turns to ways in which seaport systems in developing countries increasingly reflect interport competition on an international basis and global trends towards port concentration. The East African port system — serving Kenya, Tanzania and neighbouring countries in local, national and international contexts — illustrates both the historical processes involved in the development of an integrated, concentrated port hierarchy and the current problems of inter-port competition to which these processes have led. The relevance to African conditions of models devised in other contexts is discussed; and the relationships between the East African case and wider issues in the study of ports, transport and the developing countries are explored.

1. The changing port city in modern Africa

1.1. INTRODUCTION

Ports and cities are frequently, although not necessarily, intertwined in their location, development, functions and problems. A port acts primarily as a gateway and as a node within a transport network, while a city is essentially a central place within a wider socio-economic system. Gateway functions and central place functions are not invariably compatible. Nevertheless, the port function, wherever it has been developed, has normally and traditionally given rise to some degree of urban growth, so that port-city relationships have become complex and well-established. However, the relationship between city size and port throughput — both dependent upon a wide range of factors including the specific character of port and urban activities in particular locations — has always been highly variable and indeed somewhat tenuous (HOYLE 1972); and from the 1960s onwards, the evolution of maritime technology (involving particularly the widespread development of bulk terminals, container ports and roll-on/roll-off methods of cargo handling) has weakened the traditionally strong functional ties between ports and cities (HOYLE & HILLING 1970, 1984).

Throughout the modern world recent decades have thus witnessed substantial changes in port-city relationships. In the advanced world, and increasingly in developing countries too, including those of Africa, the migration of port activities towards deeper water, as a consequence of technological change, has become an increasingly common phenomenon. This has introduced in many ports around the world an unaccustomed separation of port and urban functions. The retreat from the traditional waterfront, usually but not invariably towards the sea, has introduced many problems, challenges and opportunities for port and urban authorities. The redevelopment of older waterfront zones, in the context of the changing economic and environmental character of port cities, represents one of the most widespread and significant of these opportunities. In North America, Europe, Australia and South-East Asia these problems and trends are now very familiar; and they are becoming increasingly relevant for the port cities of modern Africa.

Three inter-related objectives of the first part of this memoir are, firstly, to review these trends and patterns in broad terms; secondly, to comment critically on the relevance of these trends to African cityports; and thirdly, to draw attention to the specific issues and problems raised in this context. These interdependent components lead inevitably to comments on the need for progress in the development of port/urban theory, and in the analysis of a wider range of further examples from African countries, in order to identify promising avenues for future research.

1.2. THE STUDY OF AFRICAN PORT CITIES

The study of African port cities, as of port cities in general, has traditionally been inclined to focus attention either upon the origins and evolution of port facilities, activities and trade structures, or upon the patterns and problems of urban growth, land use and functions. Most attention has been given to problems of urban planning, economic functions or growth problems in specific locations or regions, and the approach has tended somewhat introspectively to analyse the port-related and the urban aspects of port cities not only in isolation from one another but also somewhat separately from the socio-economic and political systems of the regions and countries to which they belong.

Port cities have played a large part in the development of modern Africa, notably through their role as nodes in international maritime transport systems. Often characterized as gateway settlements from the standpoint of a colonizing power intent on resource exploitation, coastal cityports also provided windows on a wider world for the societies and economies of coastal and interior Africa. The role of imperial port cities in African development has undoubtedly been highly significant, especially in the sense that 18th- or 19th-century European cityport foundations, whether as innovations on virgin sites or based on older settlements established by earlier cultures, provided a key element both in transport networks and in urban systems. Subsequently modified during the process of 20th-century development, these key elements have normally provided a foundation stone of continuing importance in the context of present-day urban and transport systems. The role of imperial port cities has been discussed at length (BROEZE *et al.* 1986), as have maritime perspectives on African settlement and development (STONE 1985); and the growth of individual port cities has been frequently and carefully recorded (FORJAZ 1992, GILLMAN 1945, HOYLE 1985 & 1989, MOORSOM 1984, SCHULTZE 1970, SECK 1970a & b, STANLEY 1970, SUTTON 1970, TOUPET 1970).

Attention has been directed more recently, however, specifically to the problems and policies associated with the port-city interface, and specifically to the problems posed by the retreat from the waterfront and the consequent need to redevelop older or abandoned port areas. Similarly, there is now an increasing emphasis in port studies on comparative approaches and on the identification of common structures, mechanisms and processes within port systems. While each port city retains its individuality within its own specific geographical, political, economic and technological environments, and as a result develops its own special complexities and problems, any individual cityport nevertheless represents to a greater or lesser extent the overall trends that characterize all such locations and which reflect global rather than local factors.

More widely, as SIMON has recently emphasized, there is now a growing appreciation of cities as dynamic elements within spatial systems, involved in multidirectional inter-relationships on many scales and in many dimensions,

reflecting and responding to, as well as initiating and affecting, the evolving structures and patterns of wider regions. “It is very difficult to make sense of contemporary Lagos, Abidjan, Dakar or Maputo ... without an understanding of the changing political economy of their respective countries over time and an appreciation of their ... current position within the world system” (SIMON 1992, p. 4).

Port cities today, like cities of other kinds, are continually in transition. Urbanization, virtually by definition, is a dynamic process; and cities are forever changing, growing or declining. Unlike other types of city, however, a port city reflects in its life and character a wide range of transport-related factors on many scales, from local to global, as well as an equally varied set of urban influences constraining, stimulating or diversifying growth. A recent study has drawn attention to some elements and characteristics of the European port-city system in this context (HOYLE & PINDER 1992a & b). While many classic studies of African urban problems make relatively little reference to the port function (EL-SHAKHS & OBUDHO 1974, HANCE 1970, OBUDHO 1981, OBUDHO & EL-SHAKHS 1979, O’CONNOR 1983), numerous studies have drawn attention to specific characteristics of port-city growth (BAHI-ZAHIRI 1992, BOUTHIER 1970, DICKINSON 1984, HOYLE 1981 & 1993, ILIFFE 1970). Generally, however, the literature reveals a broad divergence between port-related and urban-related studies of African port cities; although the fundamental importance of the port function is recognized, there is implicit recognition also of two quasi-separate circuits of activity, focused upon the port and upon the city, comparable in a sense with Santos’ concept of “the shared space” in the urban economy of developing countries (SANTOS 1979).

1.3. THE PORT-CITY INTERFACE

In Africa, as elsewhere, the basic association of port functions and urban economies in port cities is derived from the convenience and importance of maritime transport, the cheapest and most accessible form of intercontinental trade for coastal states. In the past, coastal towns have grown around the shores of natural harbours, often on the basis of trading settlements established by foreigners coming by sea. Not every good natural harbour gave rise to a port city — Mtwara (Tanzania) is a classic case (HOYLE 1983) — and in modern times numerous artificial harbours have been built where port functions are needed but no natural harbour exists. Tema (Ghana) (HILLING 1966) is a well-known example. Africa’s shores are not, in general, well-endowed with natural harbours, and there is of course no close spatial coincidence between the distribution of natural harbours and the pattern of demand for modern port facilities. Some good natural harbours, such as Freetown (Sierra Leone) (McKAY 1970), thus remain un- or under-utilized, while elsewhere the expensive construction of artificial harbours has been required.

In those relatively unusual African coastal locations where favourable factors combine, however, to facilitate and encourage the development of port cities, there lies potential for substantial growth based on contacts with distant economies, cultures and societies. This spatial coincidence of favourable influences — environmental, economic, political and technological — effectively utilized by decision-makers in the past, remains generally significant in modern times. Yet the continuing prosperity of African cityports today is increasingly less dependent upon their specific maritime trading links than upon their regional and national economic roles. Ports have become more noticeably national and international transport gateways, while cities have retained national, regional and local functions of a largely different order, associated particularly with growing industrialization and with the service economy. Among African cityports, Mombasa (Kenya) illustrates this point effectively: the port acts as the major maritime gateway in relation to the Kenyan national economic space as a whole, and also serves an extra-national hinterland in Uganda and beyond: yet as an urban-industrial centre the city provides only a declining proportion of employment directly related to the port function (HOYLE 1986).

In order to understand and explain the transformation of the port-city interface, we need to consider three wider, interdependent global trends that have been going on over the past 30 years or so (fig. 1):

- First, maritime technology has moved on apace, ships have increased vastly in size, and this has resulted in the widespread development of container terminals, bulk cargo handling facilities and roll-on/roll-off handling methods, all of which have transformed major ports everywhere;
- Second, the scale of modern ports and port-related industries, with their vast land and water space requirements, means that traditional port locations are increasingly inappropriate for present-day shipping and cargo requirements;
- Third, as is only too well-known in many port cities, there has been a marked general decline in port-related employment; the onward march of technology, in this as in other spheres, has entailed thousands of job losses and substantial restructuring of the urban economic base.

These three casual factors — technological, geographical and socio-economic — which of course are closely inter-related, have produced a retreat from the traditional waterfront in many ports around the world in recent years. New port-industrial areas have emerged elsewhere, occupying substantial areas of land, sometimes land that was previously underused or not even there for, increasingly, ports occupy water-encroaching sites. It may be argued that these trends are not yet widely relevant to African circumstances, but it should be remembered that the impact of the container revolution on ports in developing countries was similarly questioned twenty or more years ago. In the highly competitive global maritime transport system to which all ports belong, world trends

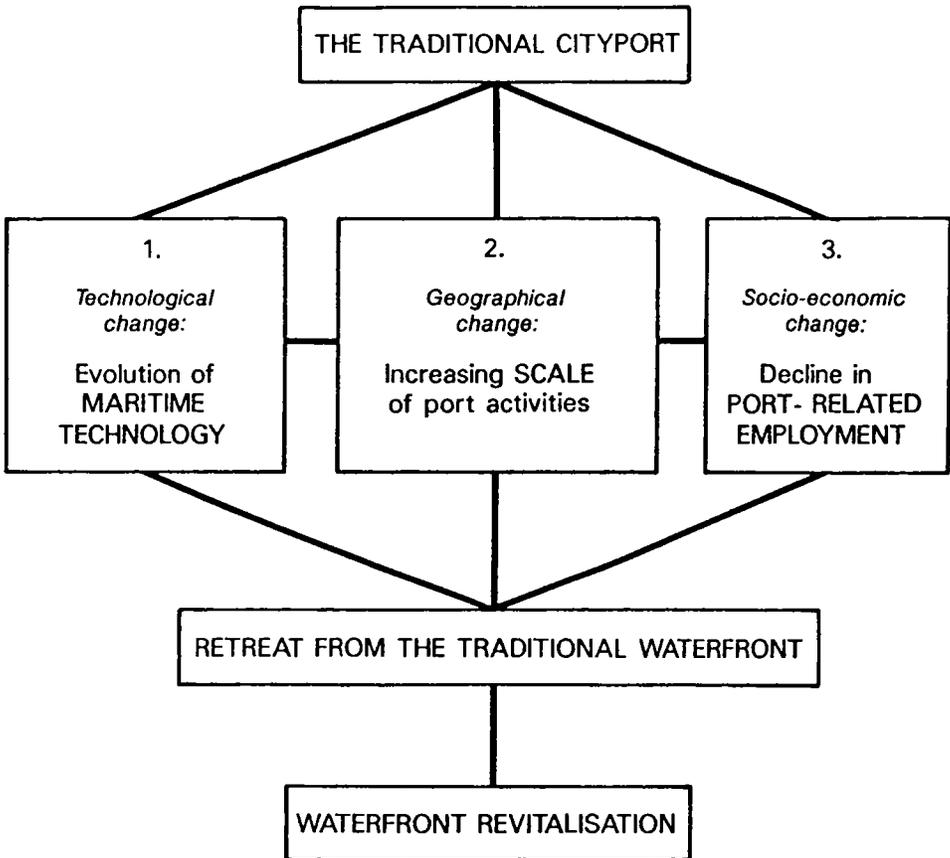


Fig. 1. — The transformation of the port-city interface.

in maritime technology and associated port-city development are likely to be followed by all major port cities wishing to maintain and enhance their competitive position.

1.4. STAGES IN PORT-CITY ASSOCIATION IN AFRICA

Thus we begin to see how the seeds of separation between port and city start to grow. One way of understanding and in part explaining these trends is to identify a series of simple but distinctive stages of port-city association, with special reference to African circumstances (fig. 2).

STAGE	SYMBOL ○ city ● port	PERIOD	CHARACTERISTICS
I Precolonial port/city		Ancient/medieval to 19th century	Close spatial and functional association between city and port.
II Expanding port/city		19th-early 20th century	Rapid commercial/industrial growth forces port to develop beyond city confines, with linear quays and break-bulk industries.
III Modern industrial port/city		mid-20th century	Industrial growth (especially oil refining) and introduction of containers/ro-ro require separation/space.
IV Retreat from the waterfront		1960s -1980s	Changes in maritime technology induce growth of separate maritime industrial development areas.
V Redevelopment of the waterfront		1970s - 1990s	Large-scale modern port consumes large areas of land/water space; urban renewal of original core. Renewed port-city links.

Fig. 2. — Stages in the evolution of the port-city interface.

1.4.1. The precolonial port city

The first stage involves what we might term the “precolonial” port city. The co-existence of such a port and city involved close spatial association and maximum functional interdependence. In such cityports the urban centre was dominated by merchants’ houses and the waterfront was often closely linked with the main market square which represented the focal point of the settlement as a whole. These attributes, common in one form or another to many early port cities, underpin the first and longest stage in the evolution of the modern port-city interface in Africa today. From the 15th century, however, or sometimes earlier, the African waterfront had become a window on a far wider world as Arab seafarers included eastern Africa within their trading circulations and as Europeans explored the Atlantic and Indian Oceans. In a European context this was a process in which Lisbon (Portugal) occupied a seat in the front stalls, but in which many other European port cities played important roles. The age of European exploration led, of course, to increased trade, political involvement and eventually in the 19th century to European colonization of much of Africa and other world areas.

In African terms, the fortunes of historic ports were deeply affected by this process: some, such as Mombasa (Kenya), were ultimately transformed by their incorporation into the politico-economic and transport systems developed by European colonial powers; others, such as Badagri (Nigeria) and Ouidah (Benin) did not survive as significant and growing trade and transport centres beyond the precolonial era. The impact of European intervention on the pre-colonial African port-city system was therefore markedly to accelerate the port selection process. Some ports utilized by Europeans at an early date — such as St-Louis (Sénégal) and Zanzibar (Tanzania) — did not survive, for technological reasons, as major modern ports; and other early colonial port-city settlements such as Tanga (Tanzania) and Sekondi (Ghana) have been upstaged by other more advantageous locations in transport terms. The major port cities of modern Africa — such as Lagos (Nigeria), Dakar (Sénégal) and Durban (South Africa) — are, however, largely those which may be described as the successful selections of the early European colonial period.

1.4.2. The expanding port city

Throughout the industrializing world of the 19th century rapid commercial developments and transport innovations forced many established ports to break out of their traditional confines, and the seeds of port-city separation were widely scattered. At the same time, however, the expansion of port facilities in selected locations exerted a marked influence upon patterns of urban land use.

In Africa the most significant development was the continuing colonial port selection process, notably in association with railway building from chosen port sites to interior destinations in the interests of political control and trade

stimulation. WHITE (1970) records that in West Africa: "Between 1897 and 1911 railways were opened from seven ports — Conakry (Guinea), Freetown (Sierra Leone), Abidjan (Côte-d'Ivoire), Sekondi (Gold Coast), Lomé (Togo), Cotonou (Dahomey) and Lagos (Nigeria), which conferred comparative advantages on these ports. After the line from Tarkwa to Sekondi was opened in 1901, the mail boats began to call at the latter in preference to Axim. As soon as the line from St-Louis to Dakar was opened in 1885, most of the trade on the Senegal river was transferred to Dakar, as it was much the better port. Again, the building of railways from Lagos and Port Harcourt to the north meant the concentration of Nigerian trade on them to the detriment of the Delta ports, hitherto more important. The ports selected as rail terminals experienced a greatly increased volume of trade, and attracted ever more investment in facilities. They thus became the foci of the trunk-road systems which emerged during the 1920s and 1930s, making their competitive superiority even more marked" (WHITE 1970, p. 16).

This process, well-documented in Ghana (HILLING 1970), also took place in East Africa (HOYLE 1967a & b, 1970, 1983) and elsewhere, and although some variations occurred in areas such as the Niger delta between what OGUNDANA (1970) termed "port concentration" and "port dispersion" the general tendency was clearly towards the concentration of port activity in an increasingly small number of ports. This process continues today, although there are several African examples of new port development in specific circumstances, discussed below.

1.4.3. The modern industrial port city

This tendency, paralleled by a similar trend towards urban hypertrophy in many African countries, has continued unabated throughout the 20th century and has been consistently reinforced by the development of hinterland communications — road and pipeline as well as rail — and by the increasing cost of building and operating ships. Modern ship operators reduce as far as possible the number of port calls and the time spent in port, and port operators introduce increasingly sophisticated cargo-handling methods. The maritime transport industry invests in the largest and busiest ports where expensive equipment achieves the maximum utilization. As in other port-city development areas, however, the most advantageous locations for port concentration are not necessarily attractive sites for modern urban growth (fig. 3).

Increasing ship size and increasingly specialised industrial growth have become important factors in modern African cityport development, and these factors continue to promote further port/city diversification. The need to establish facilities for the reception and refining of crude oil, preferably at some distance from traditional cityport core zones, and the introduction of technological changes (particularly containerization) requiring extensive land sites, have accelerated the separation of port/urban land uses and functions. Political factors

Type	Port throughout p.a.	Urban population	Industrial development	Examples
A Unifunctional	> 10 m.t. Very high volume but limited range of exports, especially minerals; imports minimal.	< 5,000 Generally very low, but with adequate infrastructure.	Mineral processing	Bonny (Nigeria) Buchanan (Liberia) Saldanha Bay (South Africa) Nouadhibou (Mauritania)
B Large multifunctional	> 5 m.t. Relatively high volume and varied range of exports (especially primary products); substantial and varied imports (especially oil).	250,000 - 2m.+ Major concentration with well-developed infrastructure.	Varied and extensive development	Dakar (Senegal) Durban (South Africa) Lagos (Nigeria) Mombasa (Kenya)
C Medium multifunctional	2-5 m.t. Relatively low volume but varied range of exports and imports.	50,000 - 250,000 Medium size towns with limited facilities.	Limited but varied	Conakry (Guinea) Douala (Cameroon) Freetown (Sierra Leone) Tema (Ghana)
D Small miscellaneous	< 2 m.t. Low-level and limited in range.	< 50,000 Minor concentration with minimal facilities.	Very limited	Cotonou (Benin) Nacala (Mozambique) Tamatave (Malagasy) Zanzibar (Tanzania)

Fig. 3. — Types of industrial cityport in modern Africa.

have not infrequently encouraged the development of port facilities while restraining urban growth, as at Dar es Salaam (Tanzania) (HOYLE 1978); and economic factors have sometimes required the provision of port facilities involving very little associated urban development, as at Buchanan (Liberia) (SCHULTZE 1970), Richards Bay and Saldanha Bay (South Africa) (WEISE 1981 & 1984). There is thus a substantial and increasing geographical distance in modern African cityports between the urban core zone and the commercial heart of the modern port: whereas in past times these two locations existed in close proximity, today the enormous land and water space requirements of modern cargo-handling methods and associated industrial activities produce a very different yet highly distinctive port-city interface.

1.4.4. Retreat from the waterfront

In global terms the most recent phase in port-city association is the retreat from the traditional waterfront which has been largely induced by maritime technological factors, the character and layout of modern port facilities being largely dictated by the requirements of ship-designers and ship-operators. The urban consequences of these trends, in terms of waterfront redevelopment and in terms of the wider contexts of local and regional socio-economic planning, have required careful study by urban planning authorities confronted with the impact of technological changes over which they have no direct influence or control.

These processes of port/city association and separation can be observed in many parts of the world today, from Europe to the Americas, from Africa to Australasia. They have operated on a variety of scales over time and in various spatial and technological contexts. Ports located on estuaries have long displayed a tendency to move downstream towards deeper water, thus gradually introducing an enforced separation of port and city. The ultimate stage of this process reached today is represented by the large-scale development of maritime industrial development areas (MIDAs) devoted, at least initially, to industries based on imported bulk commodities and occupying vast land and water sites often at a considerable distance from any associated city.

The MIDA concept is thus the very antithesis of the medieval cityport, but represents in a sense the modern expression of an historically deep-rooted process; it also indicates how far the separation of port and urban functions has proceeded. The extension of the MIDA concept to African and other developing countries represents a logical outcome of the processes of port-city growth and functional separation described above (VIGARIE 1981).

1.4.5. Redevelopment of the waterfront

The present-day stage in the evolution of the port-city interface thus involves the redevelopment and revitalization of the waterfront (BREEN & RIGBY 1993; BRUTTOMESSO 1993; HERSHMAN 1988; HOYLE, PINDER & HUSAIN 1988). Very

many people are now well aware of the problems and opportunities associated with waterfront redevelopment, and of the need for careful analysis as a basis for policy formulation. For port authorities moving out of traditional zones, the chief difficulties are associated with the acquisition, planning and development of new port areas and facilities, generally on a much larger scale than in the past; and with questions of whether, when and how to sell off older port land that is no longer needed.

For urban authorities, the virtual abandonment by the port function of these older port areas, perhaps including the original waterfront close to the heart of the urban core zone, may offer unrivalled opportunities for redevelopment. The availability of extensive waterfront zones close to an urban core requires, of course, very careful consideration of the character and timing of appropriate redevelopment. Advanced countries have found that waterfront renewal is an expensive and sensitive process: skilfully done, it can bring new life into dead and dying urban areas, can create a wide range of new economic and social opportunities, and can provide a welcome antidote to the widespread tendency towards peripheral rather than central urban development. The processes of urban conservation and revitalization in African port cities is in many places only just beginning, but clearly deserves every encouragement from local, national and international organizations including UNESCO, UNEP and UNDP.

The waterfront revitalization movement (in a modern sense) is a response to these trends and opportunities. It is a phenomenon that effectively started in North America — both in the United States and in Canada — in the 1960s and became a major industry there in the 1970s. In Europe, many older port areas are being redeveloped in a context of inner-city regeneration. Other advanced countries, such as France and Australia, are experiencing the same phenomenon, and some developing countries such as Hong Kong and Singapore are also sharing these trends. In northern Africa, substantial progress has been made towards the revitalization of urban waterfronts, for example in Alexandria (Egypt) (EWAIS 1988); and in South African cityports — notably Cape Town — many changes are under way. Numerous tropical African port cities — for example, Dakar (Sénégal) and Abidjan (Côte-d'Ivoire) — are similarly attempting to improve their urban waterfront environments. Mombasa (Kenya) has embarked on an ambitious urban conservation programme in the historic old town (KING & PROCESI 1990); substantial progress has been made with the renovation of historic buildings on the waterfront at Zanzibar (Tanzania) (SIRAVO 1996); but in other port cities — as at Dar es Salaam (Tanzania) — inadequate funds are available for the redevelopment and re-use of what would elsewhere be carefully conserved as heritage waterfront zones.

1.5. PROBLEMS AND ISSUES

The challenge presented by urban waterfront revitalization and the conservation of urban heritage zones in modern African port cities is considerable, for it involves not only an adjustment to new locational requirements for ports and a rethinking of the ways in which ports should be built for the needs of today and tomorrow, but also a redesigning of substantial urban areas in physical terms and a restructuring of the communities involved. The impact on society goes hand in hand with the impact on the environment, and both are invariably controversial and expensive.

Papers presented in a recent Special Issue of the journal *African Urban Quarterly* (edited by the present writer) approach the characteristics of African port cities in a variety of ways, and provide a reasonably representative spectrum of the problems faced by urban planners, port administrators and others whose responsibility it is to guide the evolution of dynamic African port-city systems. In his careful analysis of Freetown (Sierra Leone), GLEAVE (1994) traces the influence of port activity as an influence on the evolution of the city, particularly upon the differentiation of social and economic areas, and concludes that, as society and economy become more complex, port activity becomes less significant as an influence upon urban spatial structure. VIGARIE (1994), in contrast, offers an illuminating characterization of the remarkable port city of Abidjan (Côte-d'Ivoire), emphasizing that port growth on an unusual site reflects national and regional economic needs and policies as well as demonstrating a substantial degree of interdependence between urban and port functions.

The Ghanaian port system, analysed by ADDO (1994), illustrates particularly clearly the port selection process, from a scatter of small trading forts in the 16th century, through the selection of port sites (notably Takoradi) to serve the colonial economy, to the modern development of the artificial port of Tema. Ghana is the classic area of reference for a well-known model (TAAFFE, MORRILL & GOULD 1963) describing these processes of transition, and emphasizing the critical importance of the cityport as the historical and functional root of modern African transport systems. Tema, in turn, has become the best-known African example of a modern deep-water port built on an "artificial" site, i.e. lacking a natural harbour, at a point where modern port facilities were required in a context of integrated regional economic development, involving in this case mineral exploitation, industrialization, resettlement and agricultural transformation, centred primarily on the dam and hydro-electric power station at Akosombo.

An interesting contrast emerges from a study of Pointe-Noire (Congo) by NGUIMBI & MARCADON (1994) in which they emphasize on the one hand certain traditional African transport problems, such as the inadequacy of port facilities and the lack of integration between various land transport modes, and on the other hand the emergence of an axial land transport zone (the Congolese corridor) and its effects upon the regional urban hierarchy. The port-city system

within this case-study area is an interesting and perhaps unusual one, inviting comparisons with other zones in francophone and anglophone Africa.

Not all African port cities are located on the coasts of seas and oceans, and some reference to inland ports is appropriate. Although passing recognition may be given to the traditional concept of the desert-margin settlements of northern West Africa — Kano, Sokoto (Nigeria); Timbuktu (Mali) — as inland “ports”, the term refers essentially to river- and lake-ports. All Africa’s major rivers — notably the Nile, Niger and Zambezi — and many minor rivers too are served by river ports, and inland lakes have also given rise to substantial port development. The East African lakes, especially Lake Victoria, have long been served by a complex lake transport and trading system, within which the port and town of Kisumu (Kenya), located at the original inland railhead of the pioneer line from Mombasa on the Indian Ocean, is the primary node. In a recent analysis of Kisumu, OGONDA & ONYANGO (1994) demonstrate the interdependence of port and urban functions and also discuss the impact of road and rail competition on lake services and the effects on Kisumu of the varying levels of international cooperation between East African countries in transport terms in recent years. In contrast, a useful study of Mombasa (Kenya) (SABINI 1994), on the basis of detailed architectural analyses of the ancient core, offers an insight into port-city interdependence in terms of organic relationships between port functions and urban structures on a variety of scales from the intimate local environment of the 11th century to the metropolitan context of modern Mombasa and the industrial cityport complex of the future.

Two other recent studies focus on the changing cityport system of southern Africa. GRIFFITHS (1994) presents an analysis of changing port location in southern Africa over an extended time period, and shows how national and regional port systems (and associated urban growth) are a response to the changing politico-economic systems they both serve and promote. PIRIE (1994), in contrast, draws attention more specifically to the rapid recent transformation of the waterfront at Cape Town (which may come to be regarded as a pioneer African example of the waterfront revitalization phenomenon now familiar in port cities throughout the advanced world), and to the planned redevelopment of waterfront zones in other South African cityports. The combination of factors that leads to waterfront redevelopment in any port city is unique, although many factors are global in character and application. The specific combination of national and local factors affecting developments within South African cityports is unlikely to be paralleled elsewhere, but inevitably invites comparison with port cities in tropical or northern Africa where the need for a measure of revitalization is increasingly obvious.

2. Cityports and coastal zones: Mombasa and the Indian Ocean façade of Kenya

2.1. INTRODUCTION

Relationships between cityports and regions are also clearly recognized as important and varied. The interfaces between the cityport and the regions within which it is located and those which it serves introduce different sets of relationships. These may be less well-defined than in the case of the port/city interface, although they may reflect a similar variety of contexts — environmental, economic, political, etc. — and a similar range of issues such as transport, employment and planning. A significant difference arises, however, in terms of the spatial scales involved; for whereas the port/city interface is largely confined within the relatively discrete context of the built-up area, the cityport/region interface is not only far more extensive geographically but also involves in other dimensions a variety of different concepts, scales and levels of interaction.

There is also an important difference between the links between a port and, on the one hand, the complex set of hinterlands it serves (on a local, national and international basis) as well as a great variety of forelands across the oceans; and, on the other hand, the links between a cityport and the coastal zone within which it is located. These two sets of links clearly overlap, but the port-hinterland links involve functional connections through the medium of specific transport modes, while the cityport-coastal zone links are more likely to involve a more varied symbiosis. The interdependence of cityport and local region, therefore, involves only a limited proportion of the elements and functions characterizing a cityport economy, for a port's *raison d'être* is to serve its hinterlands in their entirety.

Recent decades have witnessed substantial changes in port-city and cityport-region relationships. In the advanced world, and increasingly in developing countries too, the migration of port activities towards deeper water, as a consequence of technological change, has become an increasingly common phenomenon. This has introduced in many ports around the world an unaccustomed separation of port and urban functions, and the consequent redevelopment of older port zones and inner city areas (HOYLE, PINDER & HUSAIN 1988, BREEN & RIGBY 1993). Similarly, the role of the cityport in a regional development context is beginning to receive increased attention, in terms of the impacts of rapid urban growth and port activity on neighbouring coastal environments, and in terms of the search for a more balanced, integrated approach to the management of port-city regions.

In this second part of the memoir discussion focuses upon the coastal zone of Kenya and the port of Mombasa as an illustration of the interdependence in an

African context of the cityport and its associated coastal zone, in terms of environmental contexts, historical legacies, political problems and planning issues. The inter-related objectives are, firstly, to review the characteristics of this case-study in broad terms; and secondly, to comment on the relevance of these trends to African cityports in general. These interdependent components lead to comments on the need for progress in the development of cityport/region theory, and in the analysis of a wider range of further examples from African and other developing countries, in order to identify promising avenues for future research.

2.2. PORT CITIES AND CITYPORT REGIONS IN MODERN AFRICA

In Africa, the cityport has traditionally been perceived as a point of entry for colonial influences, and as a central place in terms of the interdependence of the metropolitan power and the overseas dependency, rather than in terms of the evolving economy of a dependent territory. In postcolonial Africa these perceptions have changed, and the peripheral location of many coastal cityport capitals has been highlighted in the context of independent Africa's new economic development structures and patterns (MABOGUNJE 1989). Some African countries (Côte-d'Ivoire, Nigeria, Tanzania) have attempted to alleviate the problem by relocating the political capital function more centrally within their national territory, well away from the coastal "doorstep" location associated with the colonial past (CHRISTOPHER 1985, HOYLE 1978).

The problems associated with of the port/city interface in modern Africa are largely replicated by the cityport/region interface (with which the second part of this memoir is primarily concerned). Development planning in modern Africa has tended, on the whole, to consider at the national level an essential series of issues derived from an uneven development surface, an inappropriately structured economy, and a malfunctioning infrastructure. At the regional level, an emphasis on the initiation of growth centres and on economic diversification has been widespread; and in urban terms, an overriding preoccupation has been with the rapid and apparently excessive growth of primate cities alongside the limited and sometimes almost negligible development of smaller urban places. This implies a somewhat compartmentalized view of the development process, defined by region or by economic sector or by location, which seems not to involve a spatial perspective concerned with inter-relationships between city and region or with urban-rural symbiosis as a fundamental element of the day-to-day functioning of cities and regions.

2.3. MOMBASA AND THE KENYA COASTAL ZONE

Located on the Indian Ocean coast of Kenya (fig. 4) — some 400 km long between the borders with Somalia and Tanzania — Mombasa is the most important port city between Port Said (Egypt) and Durban (South Africa) and the leading outlet for an international tributary region some 1.2 million km² in extent, inhabited by over 50 million people. The population of Mombasa is very mixed: indigenous Swahili (some of whom claim Persian descent), Arabs, Indians,

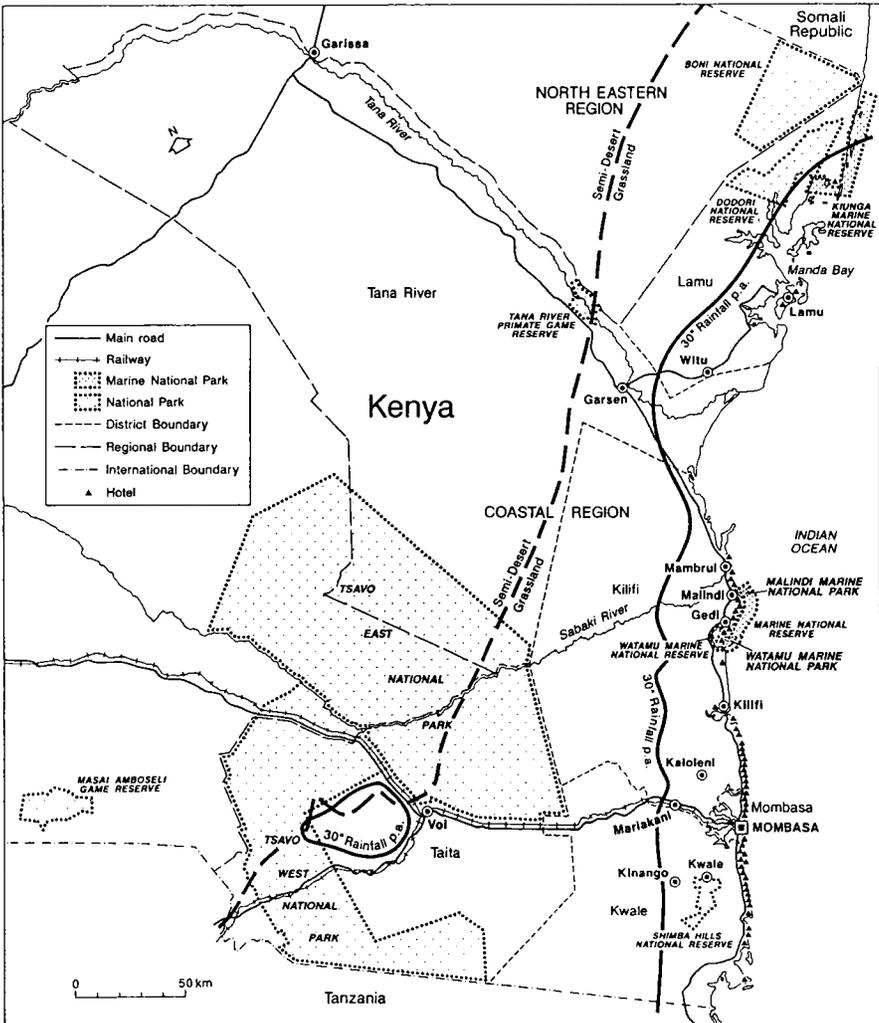


Fig. 4. — The Kenya coastal zone, defined in rainfall/vegetation terms and characterized by urban development and transport axes. Conservation and tourism are important inter-related elements in the zone.

Africans from coastal and interior Kenya, plus a few Europeans, co-exist with their different customs, cultures and creeds. Most are immigrants, attracted to Mombasa by employment opportunities ultimately derived from the port function which has been of continuous and generally increasing importance since the 11th century. Along the eastern coastline of Africa, only Mogadishu (Somalia) can claim the same historical continuity.

Relationships between Mombasa and the Kenyan national space economy are in one sense straightforward, because Mombasa is Kenya's only deep-water port — handling in 1996 some 8.7 million tonnes of cargo — and is therefore a critical element in linking the national and international surface transport systems. In another sense, however, with a fast-growing population approaching 1 million (SABINI 1994), Mombasa is overwhelmingly the primary urban and industrial node in the coastal zone of Kenya, and its dominance of this zone in socio-economic and political terms yields a wide range of complex issues ranging from water supply and employment to security and industrial decentralization. The political position of Mombasa in modern Kenya, centred upon the inland capital city of Nairobi, is also somewhat sensitive.

When looking at Mombasa and the coastal zone of Kenya, it is important to distinguish between the various administrative areas involved. Kenya is divided into seven Regions, one of which is the Coastal Region (83,603 km²). Within the Coastal Region there are six Districts (Mombasa, Kwana, Kilifi, Lamu, Taita and Tana), some of which extend a considerable distance inland; and within Mombasa District the Municipality of Mombasa is the central urbanized area on the island and neighbouring mainland (fig. 4). Two additional geographical concepts transcend these administrative areas. One involves the idea of a “metropolitan” Mombasa, including the Municipality and much of Mombasa District; a second concerns the identification of a coastal zone in environmental and ecological terms.

2.3.1. Environmental considerations

The extent to which a cityport can fulfil its developmental role in relation to its local and more distant hinterlands is conditioned by a number of factors. One of these is the physical environment which in the case of Mombasa and the coastal zone is generally advantageous. Defined on one side by the Indian Ocean and on the other by the rapid vegetational transition from the well-watered coastal forest/savanna mosaic to the dry semi-desert commonly known as the “nyika”, the Kenya coastal zone is a low-lying strip of territory between 10 and 30 miles wide, with good annual rainfall (over 1,000 mm in many places) and some productive soils.

Today, from both the landward and seaward sides, the coastal zone is attractive to settlement, trade and economic development, and as a result is relatively densely populated. The zone is identified in human terms by a mixed settlement

pattern which outside Mombasa comprises a variety of small towns (Kilifi, Malindi, Lamu) and smaller communities linked by a north-south road, and an economy based on varied subsistence and commercial agriculture and on tourism. In the past, the seasonal reversal of winds over the western Indian Ocean played a major role in the early development of navigation, trade and settlement along the Kenya coast. From November to March, the north-east monsoon brought sailing vessels from Arabia and India, some of which reached the coast of Tanzania, returning with the build-up of the south-west monsoon in April. From a maritime perspective, the coastal zone presented a relatively productive and not inhospitable environment, but was for long largely ignored by traders from the landward side. In fact, early coastal trading settlements were largely cut off from the modern hinterland of Mombasa by the *nyika*, across which there were few reliable routeways before the railway era.

A significant factor from the standpoint of modern port development on the Kenya coast is the existence of a series of drowned river valleys or “rias”

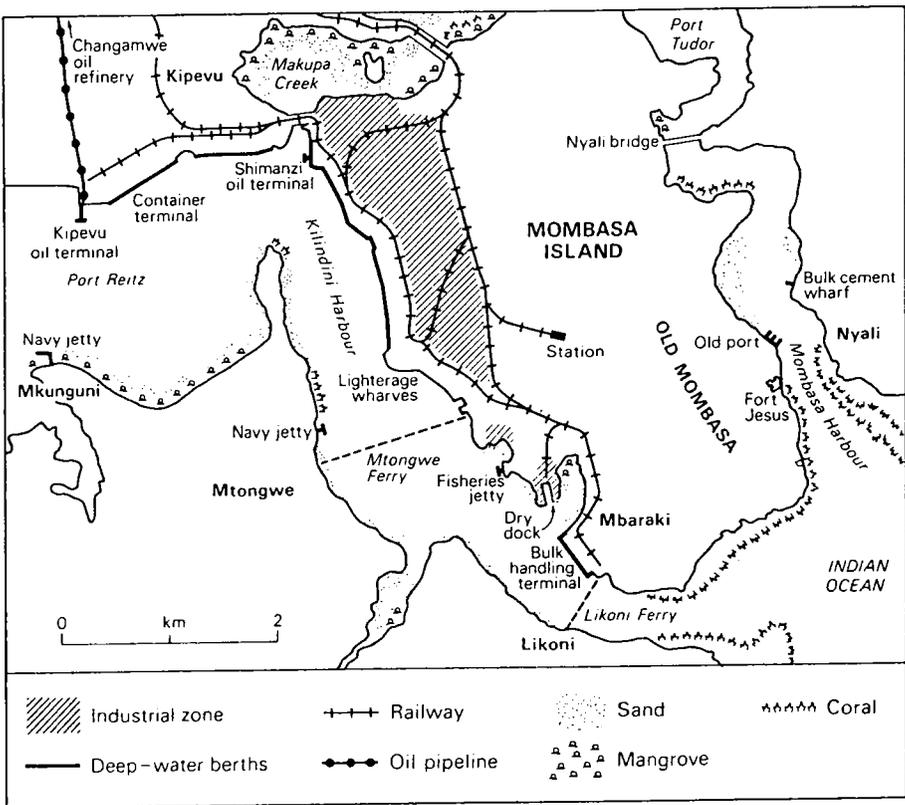


Fig. 5. — The port of Mombasa.

resulting from Pleistocene changes in the relative sea level. Some, such as the example of Kilifi, are too shallow or otherwise unsuitable for port development, but at Mombasa rias are a critical factor in the water site of the port. Mombasa Island, on which the town centre and many of the port facilities are located, lies between Mombasa Old Harbour and Kilindini Harbour (fig. 5). Each of these two harbours has been developed for commercial purposes, but in quite different ways. Mombasa Harbour, being rather narrow and relatively shallow, provides shelter for smaller craft, while Kilindini Harbour (the “place of deep water”) provides modern deep-water facilities. The fact that Mombasa has been a seaport of significance in both medieval and modern times is largely due to the geographical juxtaposition on this site of two harbours contrasted in area, depth and capacity. These conditions have enabled the port to adapt itself successfully to functional and navigational changes over time. Moreover, site conditions do not present any insuperable obstacles to physical expansion in the foreseeable future.

2.3.2. *Historical perspectives*

Today the coastal zone constitutes the maritime façade of a rapidly developing country of considerable economic potential, and forms a vital, outward-looking link with the rest of the world. This orientation is largely a product of the last two hundred years, for during all the long preceding centuries the coastlands were for trading purposes little more than part of the western shore of the Indian Ocean, dependent upon the seasonal reversal of winds. Within this coastal environment successive generations built up widely differing hierarchies of seaports, which comprised important if rather peripheral elements within the widespread network of trading towns and ports stretching in medieval times through south-western Asia to India and China.

The earliest surviving description of the external trade relations of East Africa is to be found in the *Periplus of the Erythraean Sea* (HUNTINGFORD 1976), a guide to the commerce of the Red Sea and the Indian Ocean written at some time in the first or second century AD by a Greek trader living in Alexandria. The book describes a voyage along the East African coast and mentions, *inter alia*, the trading port of Rhapta which was subsequently described as a “metropolis” in Ptolemy’s *Geographia* (STEVENSON 1932). The site of Rhapta has never been satisfactorily identified, although it has commonly been associated with the Rufiji delta in Tanzania (fig. 6).

Early medieval trading ports, such as Manda and Mombasa, to which Lamu and Malindi were soon added, probably dominated in turn from their defensive sites varying areas of coast and hinterland, their fluctuating comparative importance reflecting their varying fortunes in trade and in warfare. The experience of Kilwa, the principal medieval port on the coast of Tanzania, was essentially similar. Mombasa Island is known to have served as a maritime trading post in the

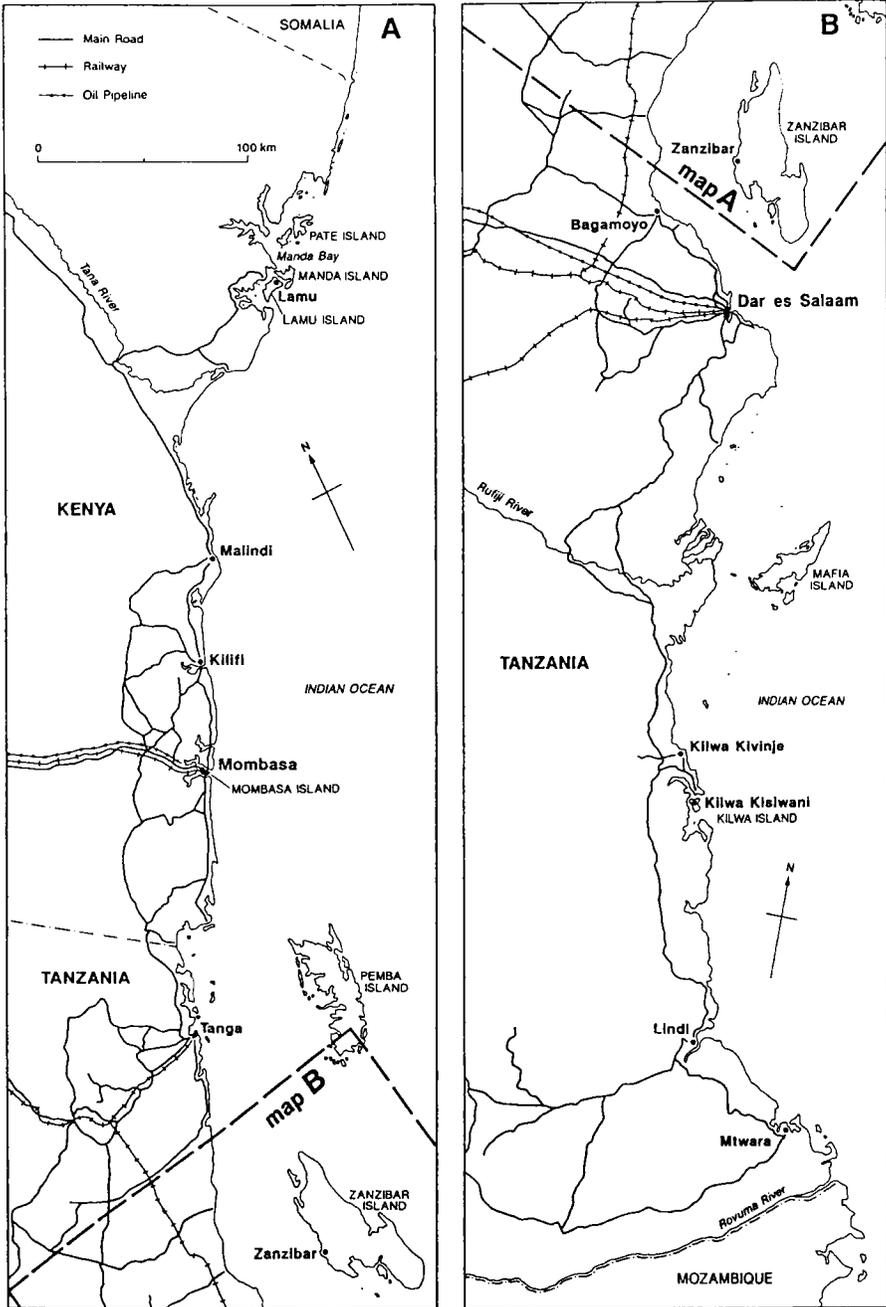


Fig. 6. — The coastal zone of Kenya and Tanzania.

11th century, and it began to take shape as a town with the Shirazi migrations (from southern Arabia and southern Persia) in the 13th century. Surprisingly, perhaps, there has been very little archaeological investigation on Mombasa Island. We know that there was a settlement from the 11th century onwards, but we cannot rule out the possibility that a town or a port existed at an earlier date. As Richard Burton put it, it is hard to believe that the Phoenician, Egyptian and Greek merchants would have neglected the finest harbour and the best site for trade upon the whole Azanian coast (BURTON 1872, Vol. 2, p. 37).

The later middle ages were marked by a much fuller development of Islamic civilization, with rapid urban expansion and trade development especially in the 14th century, possibly associated with improved environmental and political conditions (STILES 1992). Among settlements from this period along the Kenya coast that have not survived but have been excavated, the best preserved is Gede, located 13 km south of Malindi. Gede was possibly a seaport, and illustrates the character of the Arab colonial towns at the height of their prosperity. Founded in the late 13th or early 14th century, Gede reached its apogée in the mid-15th century and was finally abandoned in the early 17th century. Little is known of its history but evidence suggests that it had a large and relatively prosperous population, perhaps exceeding 15,000 (KIRKMAN 1954, 1956, 1964).

The full development of Arab settlements and their trade and culture on the Kenya coast in the 15th century, dominated by Mombasa, immediately preceded a period of decline. At the end of that century, and from the south, “the restless energy of western Europe intruded upon the East African coast like an unseasonable monsoon for which the inhabitants were totally unprepared” (INGHAM 1962, p. 6). The Portuguese programme of African coastal exploration culminated in the celebrated voyage of Vasco da Gama to India in 1497-99. He was impressed by Mombasa, but received a warmer welcome at Malindi, where he erected a stone cross and found a pilot to guide him across to Calicut. A few years later, in 1517, the Portuguese navigator Duarte Barbosa noted a degree of port-city interdependence at Mombasa: “Further on ... there is an isle hard by the mainland, on which is a town called Mombaça. It is a very fair place, with lofty stone and mortar houses, well aligned in streets (after the fashion of Quiloa) ... This is a place of great traffic, and has a good harbour, in which are always moored craft of many kinds and also great ships ...” (DAMES 1918, 1921).

Soon the Shirazi town, on the eastern side of the island facing the Old Mombasa Harbour, was paralleled and eventually superseded by the Portuguese town of the 16th and 17th centuries. Although the present urban structure of the old town of Mombasa was largely shaped during Portuguese times, the overall effect of Portuguese intervention on the Kenya coast was negative, and Mombasa maintained an attitude of open revolt against their authority from the time of da Gama’s first arrival in 1497 until their final withdrawal to the south early in the 18th century. The impressive, formidable Fort Jesus stands now as the only

substantial physical monument to their rule (KIRKMAN 1964). Rezende's map of Mombasa, dated 1636, now in the British Museum in London, shows the relationships between the fort, the Arab town, the island and the two harbours, although the size of the fort is grossly exaggerated.

The rising tide of Arab-controlled slave trading in 19th-century East Africa severely disrupted the economic and social fabric of the area (NICHOLLS 1971). Selected by the Omani Arabs as a regional emporium, the offshore island of Zanzibar (today part of Tanzania) was the chief 19th-century centre of innovation. The re-entry of Europeans on the East African scene in the later 19th century coincided with important technological changes: the opening of the Suez Canal (1869), the change from sail to steam as a means of propulsion of vessels, the rapidly increasing size of ships, and the growing importance of railways. A combined result of these innovations was that in early colonial East Africa arterial railways were built from selected port sites (such as Mombasa) selected for their ability to accommodate larger steamers in a context of increasing trade with Europe via Suez.

In Kenya, and indeed in eastern Africa generally, Mombasa was the principal beneficiary in this process whereby a traditionally fluid port pattern became crystallized as more capacious, sheltered, deep-water harbours replaced the minor inlets and open shorelines previously used by smaller ships. The intention to build railways, themselves powerful agents of innovation and economic transformation in the hinterlands, was the immediate cause of concentration of interest and activity on appropriate modern seaports, a process that took place in many colonial territories. Mombasa was particularly fortunate at this point in time, for its general geographical location and its specific site conditions enabled the Kenyan port city to establish and maintain a central place in the modern economic life of the coastal zone.

2.3.3. *Political geography*

The coastal zone provided a problem of political geography that involved Mombasa and other East African seaports during the European colonial period (1880s - 1960s). The East African coastal strip was defined, politically, as the zone lying approximately within ten miles of the coast. For centuries the coastlands and offshore islands of East Africa were largely controlled by immigrant Arab traders, latterly through the Sultan of Zanzibar, and there existed for long a considerable degree of geographical unity, physical and human, reflected in historical circumstances and population conditions. Under British colonial rule, however, the Zanzibar islands became a Protectorate, whereas Kenya became a colony and Tanganyika (after 1919) a mandated territory.

With the coming of the Europeans to East Africa in larger numbers during the 19th century, the southern section of the strip (now in Tanzania) was ceded by the Sultan of Zanzibar to Germany in 1890, and thus became part of German

East Africa and in 1919 of Tanganyika. The Kenya section, however, administered by Britain, remained technically under the authority of the Sultan until 1963 (MELAMID 1963). The situation of Mombasa within the Kenya section of the strip added point to the need to find a solution to the problem prior to Kenya's independence in 1963. A commission of enquiry reported that a majority of the inhabitants of the strip favoured union with Kenya (ROBERTSON 1961). The *de jure* Arab rule of the coastal strip was thus brought to a peaceful end; but this was quickly followed, early in 1964, a few weeks after Zanzibar's independence, by a political revolution against the new Arab government which also ended the *de facto* Arab rule in the former Protectorate.

2.3.4. *The rise of the modern port*

The point of departure for the modern port of Mombasa was the purchase in 1895 of land near Kilindini Harbour as a base from which to direct the building of the railway through interior Kenya to Lake Victoria. Using Mombasa as an initial base, Britain had assumed political control of Kenya in 1895, and (as elsewhere) a standard procedure was to consolidate that control with an outline transport infrastructure, beginning with a railway to the interior from a selected port site (HILL 1949). Mombasa was the obvious choice, as an established town, with a deep-water harbour of recognized potential. Earlier, Captain Owen had written that "Perhaps there is not a more perfect harbour in the world than Mombasa" in his account of the 1820s hydrographic survey of the East African coast (OWEN 1833, p. 412). Seventy years later, information was translated into action. "The port possesses great facilities for development as well as sites for warehouses and wharves of almost indefinite extension" (MOLESWORTH 1899) ... "The most urgent necessity is a deep-water berth ... (and) a comprehensive plan showing what will be the ultimate aim and object to be attained when traffic largely develops" (GRACEY 1901).

From these beginnings, the port of Mombasa has grown throughout the 20th century, beginning with lighterage wharves at Mbaraki and proceeding upstream from 1926 to 1958 with deepwater berths along the north-western shore of the island. From the 1960s to the present day, additional deepwater berths and various forms of specialised quayage including a container terminal and oil-reception facilities have been added on the mainland at Kipevu. There are plans to extend these facilities, in the context of a maritime industrial development area, along the southern side of Port Reitz. The urban area, for long confined to the island, has gradually spread to the adjacent mainland on both the northern and southern sides and also north-westwards along the road/rail axis towards Nairobi.

2.3.5. *Urban and regional planning*

An international seminar was held in Mombasa in 1992 to review issues involved in urban and regional planning in the coastal zone. The conference took the view that there is clearly a perceived need to clarify relationships between Mombasa and its region, distinguishing between administrative units and geographical areas. There is some confusion between the municipal, district and regional areas, and with the concept of a metropolitan urban-industrial zone. There is a need for, and an increasing awareness of, a closer scrutiny of relationships between port and city, and between cityport and region.

Among the most critical issues of concern to those who live and work in the coastal zone, and those who have the responsibility for designing planning strategies, the specific problem of assured supplies of water of good quality is paramount. This question links together the context of increased pressures in a rapidly expanding city where housing policy is inevitably a major issue; problems of pollution derived from port, industrial and urban activities; and a generally increasing awareness of environmental questions and responsibilities. Beyond this, one of the most complex questions in both urban and rural parts of the coastal zone concerns land occupancy and land tenure, invariably a difficult problem in a multicultural society with deep roots and a strong attachment to land resources. Infrastructural problems of increasing concern include the provision of modern, efficient transport systems; as a whole, the coastal zone is over-reliant upon road transport, notably on private cars and on bus services that are sometimes less than efficient. Urban and local rural roads have been improved greatly in recent years, but still constrain mobility. The major axis parallel to the coast, however, still relies on ferries to link Mombasa with the southernmost part of the coastal zone (a high-level bridge has been discussed but rejected on grounds of cost); and the major national transport axis is, of course, the Mombasa-Nairobi route used by rail, road and pipelines (Republic of Kenya 1989a & b).

The development of the Kenya coastal zone as a major national and international tourist destination area has brought many benefits in terms of infrastructural provision — roads, bridges (as at Kilifi), local air services — and an increased environmental awareness expressed, for example, in the establishment of a marine national park at Watamu (near Malindi) and in the close attention now being given to the conservation of the urban fabric of the traditional core areas of Mombasa, Malindi and Lamu (KING & PROCESI 1990). Tourism is regarded throughout the coastal zone, as indeed throughout Kenya, as a very valuable if rather sensitive component of the economy. It would be difficult to overemphasize the importance of tourism to the Kenyan economy, for in recent years this industry has replaced coffee exports as the country's principal earner of foreign exchange. There is, however, a continuing need for increased harmonization between the demands of tourism and the needs of other elements in the local economy.

Mombasa is conscious, as a major cityport, of its position within the Kenya coastal zone and within the national Kenyan economy. Like many modern cityports of colonial origin and development, Mombasa was once a political capital. From 1895, when British control over what is now Kenya was firmly established, to 1907, two years after the railway from Mombasa to Lake Victoria had been completed, Mombasa served as colonial political capital. It became clear, however, that a more centrally located capital would serve far better the interests of the colony as a whole, and especially the interests of the European settlers in the highlands of the interior. Mombasa therefore quickly lost its national capital status, and has subsequently been regarded by Nairobi as a useful functional appendage. Today Mombasa believes, with some justification, that it is somewhat undervalued within the Kenyan state. As a cityport of national and international significance, Mombasa has developed an international airport, but has not yet been accorded city status and has not yet acquired a university, both of which are long overdue in view of the substantial and diverse demographic and economic base of the municipality and district.

The Kenya coastal zone illustrates on a local scale the widespread problem of imbalanced urban hierarchies in African and other less-developed countries. Within Kenya, Mombasa is second in size only to Nairobi, the capital. Within eastern Africa, Mombasa is an urban centre of the first importance. Within the coastal zone, all other urban places (Malindi, Lamu) are virtually insignificant by comparison. In such circumstances the conventional urban/rural divide may be rejected in favour of a more realistic dichotomy between the largest urban places, on the one hand, and the smaller urban centres and rural areas on the other. The notion of controlling city size can be rejected as impracticable, given that modern world society is increasingly urbanized; but the desirability of fostering the growth of medium-sized and smaller towns and growth centres should be emphasized so as to encourage the emergence of a more varied and balanced settlement hierarchy within the space economy of regions and nations.

3. Inter-port competition in developing countries: an East African case study

3.1. INTRODUCTION

Relationships between seaports and the hinterland regions they serve are often complex in the developing world, as in advanced countries, and ports and hinterlands are normally closely linked in terms of their development, functions and problems (VIGARIE 1979). Ports act primarily as gateways and as nodes within international transport networks (BIRD 1980 & 1983), and their fortunes reflect the changing circumstances of their hinterlands and forelands. Hinterlands exhibit a variety of socio-economic and political systems which both reflect and are reflected by the character of ports or port systems. Interdependence between seaport gateways and their hinterlands is thus a first principle upon which seaport development is based (CHARLIER 1983).

Gateway functions and regional or national development policies and patterns are not invariably compatible, as congestion in established ports and the need to construct new ports illustrate. Nevertheless, the port function, wherever it has been developed, has normally been related to some aspects of inland growth, and economic development has in turn required port facilities, so that port-hinterland relationships have become complex and well-established. Throughout history there has usually been a close relationship between a port and its largely exclusive hinterland. From the 1960s, however, the evolution of maritime technology (involving particularly the widespread development of bulk terminals, container ports and roll-on/roll-off methods of cargo handling) has weakened the traditionally strong functional ties between ports and port-cities (HOYLE & HILLING 1970 and 1984); but these trends have in some ways strengthened the links between ports and hinterlands, making it more generally clear that a seaport is a national and international transport facility.

The third part of this memoir first presents a brief overview of some theoretical contributions to the study of port hierarchies in the context of African seaports and their associated hinterland regions. The discussion then focuses upon East Africa and the successive seaport hierarchies which have served this part of the developing world in the past and today. The inter-related objectives are, firstly, to review the characteristics of this case study in broad terms; and secondly, to comment on the relevance of these trends to seaports in the developing world in general. These interdependent components lead to comments on the need for progress in the development of seaport/hinterland theory, and in the analysis of a wider range of further examples from African and other developing countries, in order to identify promising avenues for future research.

3.2. PORT HIERARCHIES AND INTERPORT COMPETITION

The competitive position of a port in relation to other ports is the criterion which most profoundly influences its fortunes in the longer run. This well-known principle of port geography and port economics reflects the fact that no port is an isolated phenomenon, but belongs to a port group, hierarchy or complex which is functionally interrelated on a local, national or international scale. A port is also a dynamic phenomenon, changing in its morphology, functions and status over time. In national or regional terms, the character and functions of the various ports in a complex or hierarchy are likely to change as a result of the differential impact of factors affecting port growth. A classic model of transport network development in developing countries (TAAFFE, MORRILL & GOULD 1963) illustrates the degree to which such networks are rooted, functionally and historically, in port systems; and also demonstrates the process of port concentration from a scatter of small unconnected ports along a coast to a situation in which only one or two major ports provide specialised services for a wide range of hinterlands linked by an integrated transport system.

The process of port concentration has been long recognized as a general trend, and has been analysed in an African context in some detail (HILLING 1975 & 1977, OGUNDANA 1970 & 1971). In 1938 SARGENT observed that “the tendency of modern sea traffic is to concentrate, so that the number of effective ports grows less” (SARGENT 1938, p. 2). In more recent decades, the economics of maritime transportation have required ever-increasing specialisation of port installations and, as BIRD has observed, “If specialisation means concentration, the throughput of cargo via small ports must either increase to justify modern port installations, or the cargo will be concentrated at one of a series of small ports, to the others' disadvantage which may be mortal” (BIRD 1971, p. 74). These arguments illustrate a process further discussed by MIKOLAJSKI (1964) and others (BIRD 1971; HOYLE 1983, pp. 198-201) who have outlined some of the complexities of hinterland typology; and lead ultimately to the view that, in advanced societies and in a context of intermodalism, the idea of the hinterland no longer has any relevance (BLUMENHAGEN 1981, HAYUTH 1980 & 1982, FOGGIN & DICER 1984, SLACK 1985, HOARE 1986). This view has been criticized by CHARLIER & RIDOLFI (1994).

Developing countries have not yet reached this stage of sophistication in their transport network development, however, and port-hinterland relations and the hinterland concept retain considerable relevance. The changing relationships within a port complex have also received some theoretical attention, for example by OGUNDANA (1970, 1971) who suggested, on the basis of his studies of the changing port system of Nigeria, that the composite pattern of a port complex may assume, over time, one or two basic forms: “port concentration” or “port diffusion”.

“Port concentration implies that a few of the many ports in a complex are of disproportionate significance, and this structure emerges as a result of the

increasing relative significance, over a period, of certain ports as compared to others which either gain more modestly or decline in absolute terms. Port concentration results initially in a relative decline but may lead to an absolute decrease in the number of ports operating. Port diffusion occurs when higher order ports decline, leading to the increasing significance of new or previously smaller ports, and involves an absolute or relative increase in the number of functioning ports” (OGUNDANA 1970, p. 169).

Ogundana also proposed that each era of port concentration or diffusion might be said to possess its own hierarchy and that, if a hierarchy experiences frequent change it might be said to have an “unstabilised port structure”. Alternatively, a port able to maintain its leadership within a system over a long period of time might be described as a centre of “sustained port dominance”.

These ideas underpinning the process of port concentration and interport competition over time clearly relate to the experience of many port systems around the world, in different temporal and spatial contexts. In the 20th century, the factors affecting port development in advanced and developing countries have generally favoured the process of consolidation, involving the increasing concentration of port traffic at ever larger terminals. Over longer time periods, however, it is possible to recognize alternating periods of concentration and diffusion in the evolution of a port system. The most common experience throughout the developing countries over many centuries has been a flexible system of diffusion of port activity.

From the later 19th century, however, investment in modern port facilities, and modern ship design, required the stabilization of these formerly rather fluid port patterns. This process of concentration, closely associated with maritime technology (in the form of steamships) and with the building of railways linking ports with inland destinations, was part of the process of establishing European colonial control. Political frameworks and economic patterns established around the turn of the century have been in some respects perpetuated, in others modified, by post-independence changes involving both the national and extra-national hinterlands of the coastal ports. The East African seaport system exemplifies these principles very clearly, and invites comparison with other systems — in, for example, India, Malaysia, Latin America or West Africa — where experience has in many respects been similar.

3.3. HISTORICAL PERSPECTIVES

In early medieval times port activity was quite widely dispersed along the Kenya coast, and several locations — including Pate, Manda, Lamu, Malindi and Mombasa — were seaports of significance, whereas Kilwa was the only major commercial centre on the coast of Tanzania (fig. 6). In a context of interport competition, each of these ports probably dominated in turn varying areas

of coast and hinterland, their fluctuating comparative importance reflecting their varying fortunes in trade and in warfare. Most trading centres were based on defensive islands which conferred a clear advantage.

In spite of competition from a variety of other ports along the East African coast, Mombasa had clearly emerged by the 16th century as a centre of sustained port dominance, as no other port along this coast possessed its combination of positive situation and site factors. Later on, the 18th century was a period of rather low-level, dispersed port activity on the East African coast, but the 19th century brought significant changes.

3.4. THE RISE OF THE MODERN EAST AFRICAN PORT SYSTEM

The modern process of port concentration in East Africa effectively took place in the 1890s, when the beginnings of modern port development coincided with the start of railway construction to the hinterlands. The degree of port concentration experienced in Tanzania during colonial and post-colonial times has been less marked. In German East Africa (1895-1919) it was originally intended to build three railways from different coastal ports: a northern line from Tanga towards Kilimanjaro; a central line from Dar es Salaam to Lake Tanganyika; and a southern line from Kilwa towards Lake Malawi (fig. 7). The third of these was never built, although the modern Tanzania-Zambia railway (completed in 1975) is in a sense its present-day equivalent; and there were also proposals to extend the central line towards Rwanda, and the northern line to Lake Victoria (GILLMAN 1942). The intention was to create a more widespread diffusion of port activity, economic exploitation and political control, and to avoid the apparent over-concentration on Mombasa shown by the British in Kenya.

Tanga was the first of the modern seaports of the East African mainland to be developed, its primary role being to serve the agricultural economy of the northern part of the territory, initially based on coffee and rubber, later on sisal. A small jetty was built in 1892 to receive imported railway construction materials, and this marks the beginning of the modern process of port development on this site. The port has not, however, grown very substantially, for two main inter-related reasons: there are no deep-water facilities (other than a specialized fertilizer jetty); and the hinterland, although productive in cash-crop terms, is geographically limited. The Tanga-Arusha railway has not yet been extended to its proposed terminus at Musoma on Lake Victoria, despite political interest reiterated by Uganda. In a more prosperous economy than that of modern Tanzania, it is possible that Tanga might have been expanded as a deep-water port; the fact that it has not done so illustrates not only its own intrinsic weakness but also the overriding power of maritime factors in encouraging port concentration on larger centres, in this case the primary Tanzanian seaport of Dar es Salaam (fig. 8). Barge carriers would be an appropriate technical innovation at Tanga,

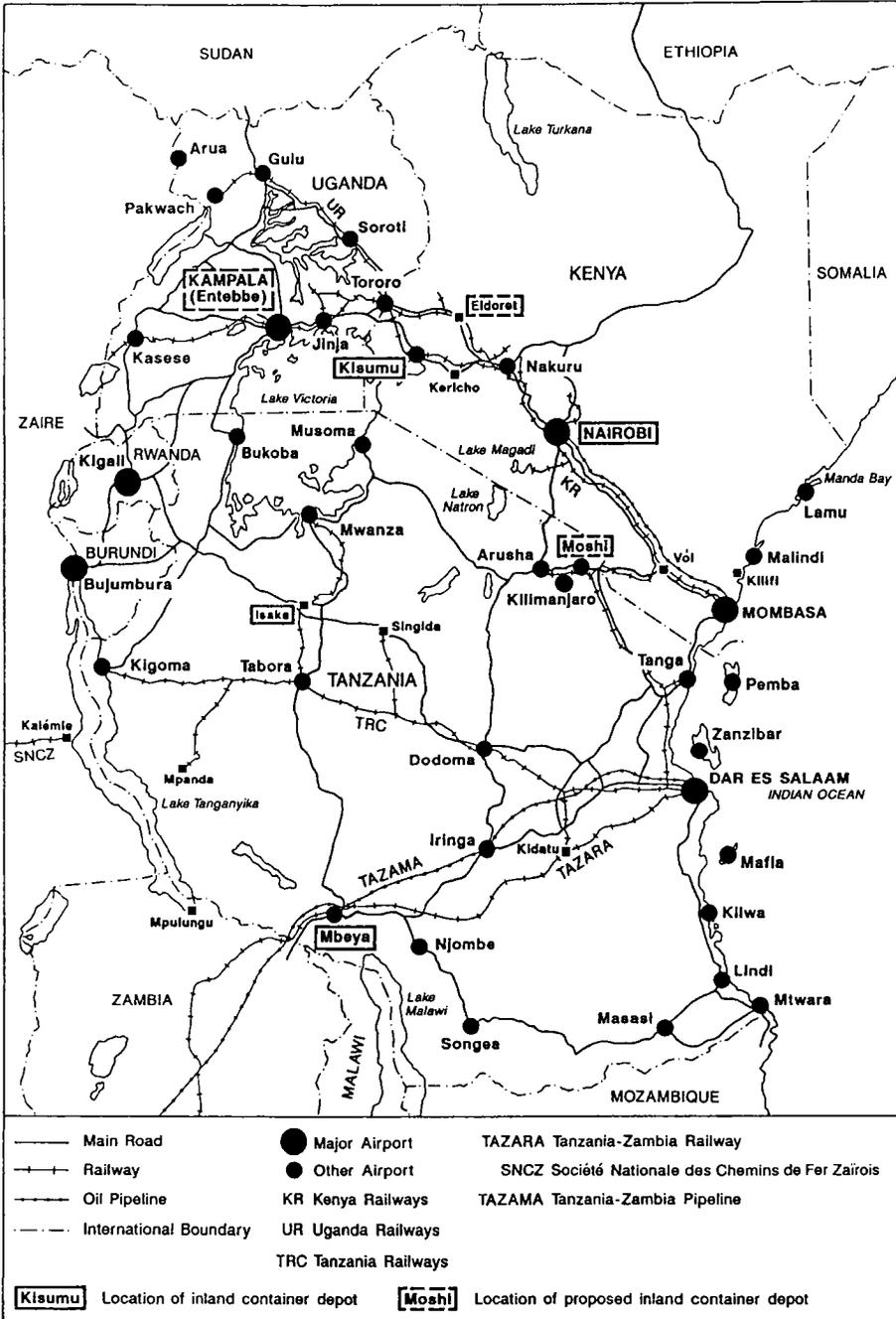


Fig. 7. — The East African transport system.

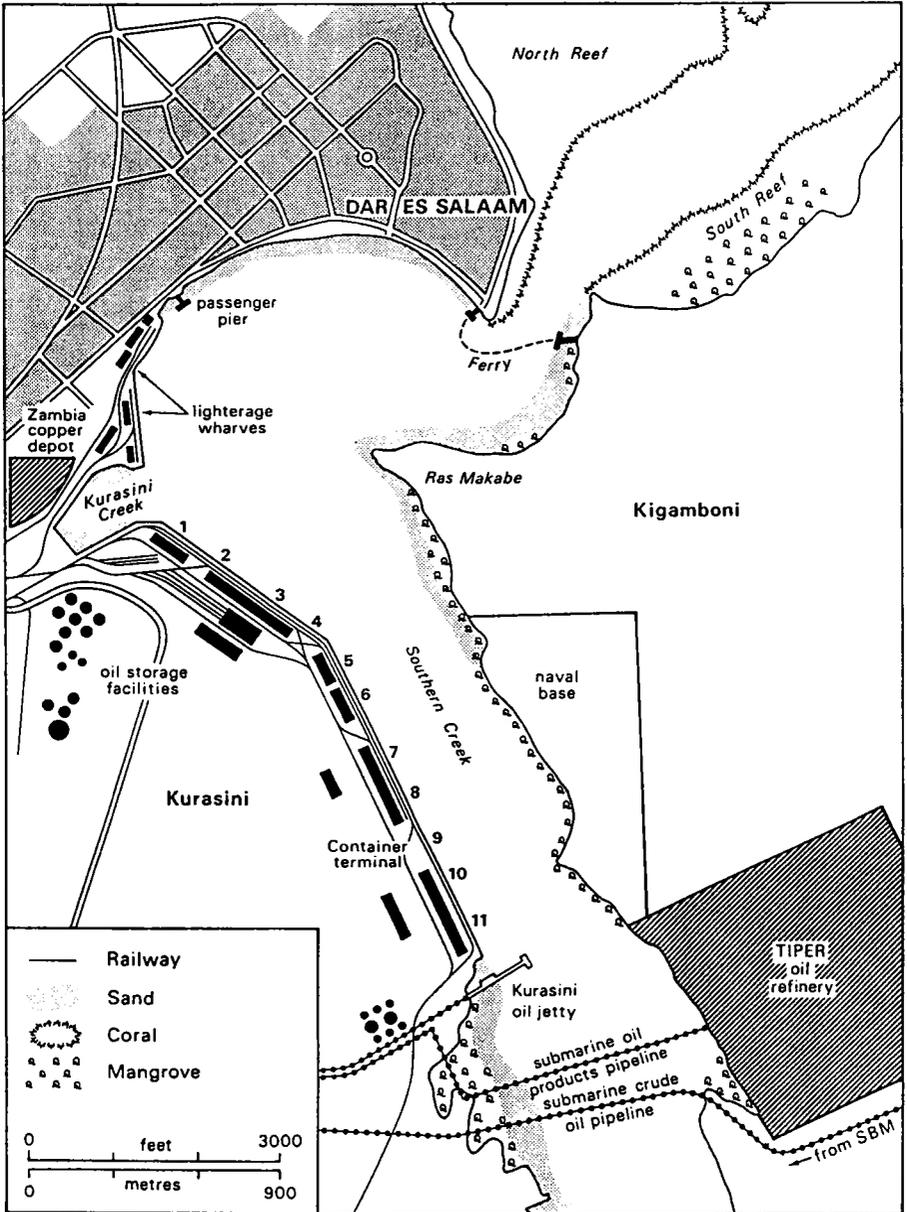


Fig. 8. — The port of Dar es Salaam.

as in some West African ports (HILLING 1983), but these expensive vessels are not used in East Africa at present.

Dar es Salaam has actually captured most of Tanga's potential traffic after a link was opened in 1963 between the northern and central lines, from Korogwe to Ruvu (HOYLE 1965, O'CONNOR 1965). Previously much of this traffic was diverted to Mombasa along the Voi-Moshi feeder line completed in 1924, whose use has been marginal after the collapse of the East African Community in 1977 and the correlative break-up of the East African Railways Corporation as well as of the East African Harbours Corporation that ended regional co-operation in the field of transport. Both before and after these events, Tanga offers a good example of the "shadow effect" arising from the opening of branch lines to major ports "siphoning" the hinterland of a minor one. In the container era, this is an even more limiting factor to port growth; a comparable case is that of the new port of Taichung, "sandwiched" between Keelung and Kaoshiung on Taiwan's west coast (TODD & HSUEH 1990, TODD 1993).

The Germans originally chose Bagamoyo, seaward terminus of the trans-Tanzanian Arab caravan trade route to Lake Tanganyika and beyond, as their chief port and seat of government. By 1891 it became obvious, however, that the sheltered harbour at Dar es Salaam, where a new Arab port and town had been founded in 1867, was more suitable. It was thus from Dar es Salaam that the construction of the central railway began in 1905, reaching Kigoma in 1914. During the pre-World War I years, the Germans established a port-hinterland system with clear objectives, a logical structure and considerable potential for further development. Moreover, the system was designed to serve not only German East Africa (which included Rwanda and Burundi, then known as Ruanda-Urundi) but also eastern Congo (formerly the Belgian Congo) and, ultimately, Zambia and Malawi (HANCE & VAN DONGEN 1958).

When, after the defeat of Germany, Tanganyika emerged as a League of Nations territory, the role of Dar es Salaam as a port serving extra-territorial areas was recognized by the incoming British administration. In 1921 sites at Dar es Salaam and Kigoma were leased to the Belgian government to facilitate traffic flows to and from the then Belgian Congo. This link was further underscored when, in 1956, three deep-water berths were opened at Dar es Salaam, one of which was financed by the Belgian government; and a commission was established to facilitate traffic flows through the port to and from Congo, Rwanda and Burundi. The growth of Dar es Salaam has been stimulated from the later 1960s onwards by rapid increases in Zambian traffic, and additional deep-water berths were constructed in the 1970s with financial support from the Zambian government.

Two further elements in the diffusion of modern port activity on the Tanzanian coast remain. One is the port of Zanzibar, which continues to serve the economy of the offshore islands but no longer fulfils its 19th-century role as a regional emporium (HOYLE 1983). The other is the deep-water port of Mtwara,

in the far south of Tanzania, which was opened in 1954 (BROOKFIELD 1955) together with a short railway to serve an ill-conceived agricultural development scheme focused upon groundnut production (HOGENDORN & SCOTT 1983). The scheme failed, the railway was removed in 1963, and the harbour and port facilities at Mtwara remain seriously under-utilized. From time to time, as pressure on the primate Tanzanian port has increased, suggestions have been made that some traffic might be diverted to Mtwara or to Tanga. Shipping companies, however, and land transport organizations, have not generally supported this idea. Although modern port development in Tanzania is more diffuse than in Kenya, however, the degree of concentration on the primate port is in many ways just as strong.

3.5. THE SECOND PORT DEBATE IN KENYA

In Kenya there is some anxiety that too high a proportion of economic activity in the coastal zone is concentrated within Mombasa Municipality and District. In theory, a national or regional port hierarchy is a dynamic phenomenon which may gain or lose constituent elements in the course of time (TODD 1993). This happened on the Kenya coast in the past, as has been shown above, but not during the 20th century. Elsewhere, new ports of various kinds have been established in several other African countries in recent years, often in the context of a major regional development programme, as at Tema (Ghana) (HILLING 1966, ADDO 1994), Abidjan and San Pedro (Côte-d'Ivoire) (CHARLIER 1995, VIGARIE 1994) and Richards Bay (South Africa) (WEISE 1981a & b) (fig. 9). In Kenya the possibility of establishing a second deep-water port as a basis for a new urban and industrial growth pole within the coastal zone has been under discussion since the 1970s (Republic of Kenya 1977). The virtually complete dependence of Kenya upon the port of Mombasa is a sensitive issue in political and strategic terms, and the creation of alternative coastal growth centres would accord with the Kenya government's broad strategy of development diffusion.

The site selected for detailed consideration is at Manda Bay, on the north Kenya coast near the historic island port of Lamu (fig. 10). The site offers a splendid, sheltered deep-water harbour and extensive areas of level land for development where a new industrial cityport could be created at relatively low cost. Provided that adequate hinterland communications were established, Manda Bay could become a basis for a new growth pole of considerable long-term potential. Although the arguments in favour of such an innovation seem attractive, those against have hitherto proved more powerful. In the absence of any large-scale industrial traffic generator, it seems likely that the prospects of a new port would be limited and its role localized as in the case of Mtwara, Tanzania.

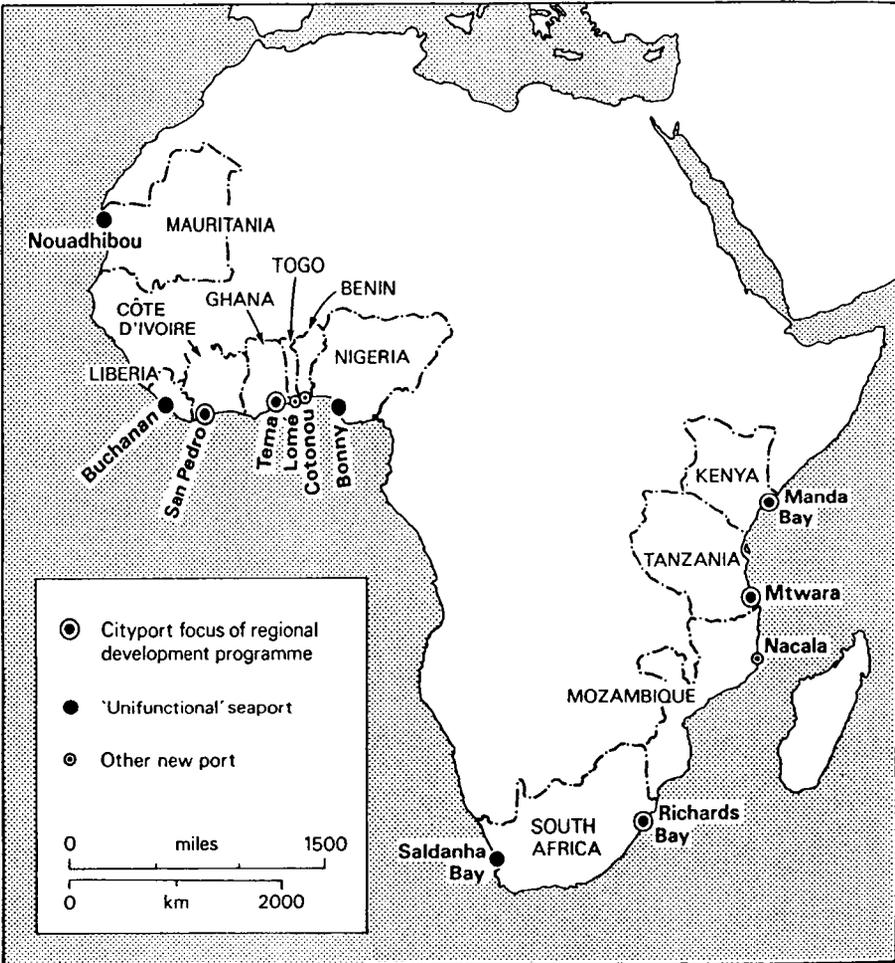


Fig. 9. — Some examples of new port developments in modern Africa.

In this respect the proposed Kenyan port contrasts with most other new city-port growth poles in modern Africa, where a specific industrial *raison d'être* or the provision of deep-water facilities for the export of bulk cargoes has provided an essential stimulus for port development. The handling of coal at Richards Bay (South Africa) and of iron ore at Saldanha Bay (South Africa), Nouadhibou (Mauritania) and Buchanan (Liberia), the treatment of timber at San Pedro (Côte-d'Ivoire), the aluminium industry at Tema (Ghana) and the phosphate developments at Lomé and Kpémé (Togo) all provide examples of motivating industries without parallel in the Kenya case. The arguments in favour of Manda

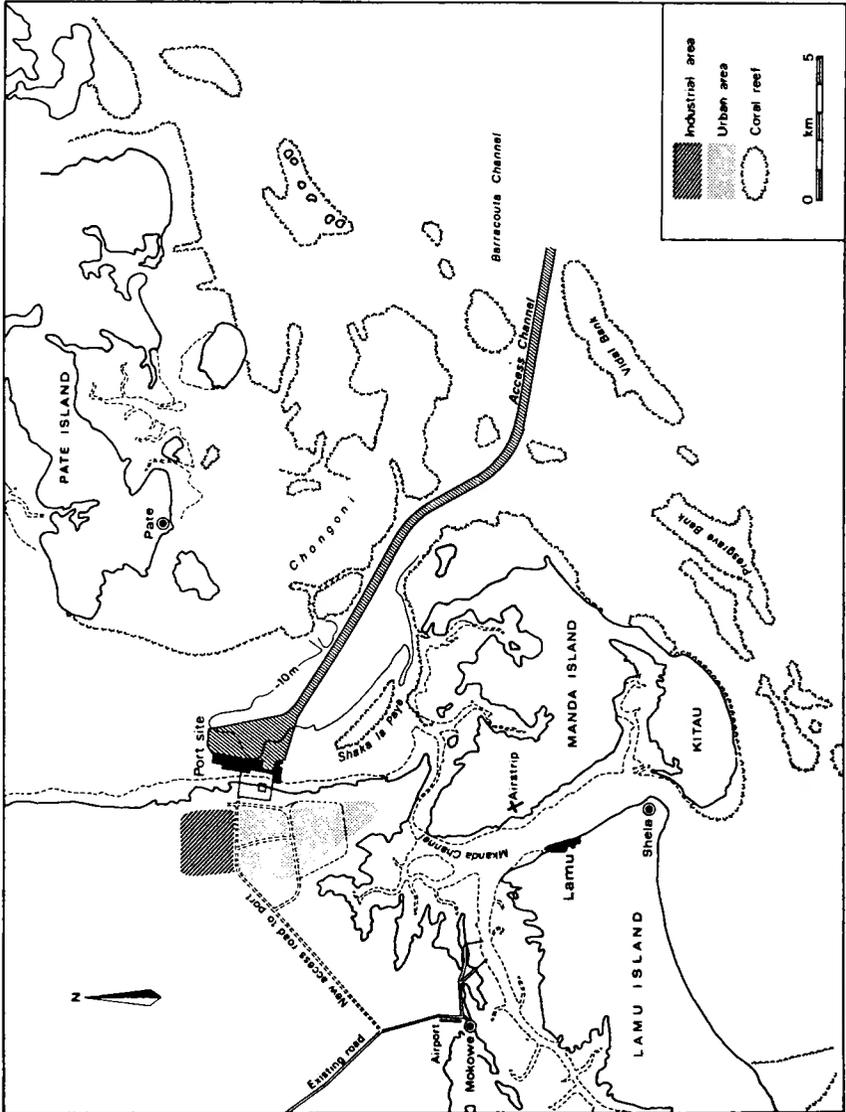


Fig. 10. — The proposed port of Manda Bay, Kenya.

Bay rest primarily on the socio-economic and strategic desirability of developing a neglected and relatively unstable corner of the national territory — an area of considerable long-term potential but limited resource endowment — and also to some extent on the perceived need to provide a solution to actual and potential problems associated with port and urban congestion at Mombasa as Kenya's principal maritime industrial development area continues to expand (SABINI 1994).

3.6. PORT CONCENTRATION

Until the early 1950s Mombasa was East Africa's sole deep-water port and this, together with the relative levels of development of Kenya and Tanzania and of the land-locked countries served through their ports, was reflected by its 70.6 % market share in 1953 shown at table 1. Since then it has lost some ground against the Tanzanian ports as a whole, whose overall share has risen from 29.4 % in 1953 to 43.7 % in 1978, before declining slightly to 37.3 % in 1993. At the same time concentration has increased in the Tanzanian sub-system, as Tanga's share has diminished from 7 to just 1.5 % between 1953 and 1993, and that of Lindi and Mtwara from 3.1 to 0.9 %. On the whole, in terms of interport competition and port concentration, the winner is Dar es Salaam which has gained some ground internationally against Mombasa as well as nationally against the other Tanzanian ports.

As these two evolutions took place more or less simultaneously, the port concentration index computed as the square root of the sum of the squares of the above individual market shares (HOYLE 1983, pp. 167-9) should be used with great care. When considering the four ports as individual elements in the East African port system, it shows a cycle of phases of concentration (1953-63 and 1983-93) and diffusion or deconcentration (1963-83). When taking into consideration Mombasa in comparison with the three Tanzanian ports as a whole, the conclusion is somewhat different, however, with two phases of concentration (1953-63 and 1978-83) and another two of deconcentration (1963-78 and 1983-93). This is because traffic has concentrated steadily towards Dar es Salaam within the Tanzanian sub-system, as can be seen from the index computed from the market shares of the three ports concerned.

Traffic concentration varies substantially from one type of traffic to another, as the four East African ports have different traffic structures. Table 2 shows that crude oil and containers are handled only in Mombasa and Dar es Salaam, both of which feature one of the two port refineries and container terminals of the area. As their respective weights for these two types of traffic are fairly evenly balanced, the highest degree of port concentration is recorded for dry bulk, the majority of which is unloaded or loaded at Mombasa. In contrast, other liquid bulk and conventional cargoes are more widespread in the system, as can be seen from their rather low concentration indices when computed for the four East African ports or the three Tanzanian ports taken separately, or for Mombasa against the Tanzanian ports.

Table 1
Traffic concentration at East African ports, 1953-1993

	Market shares (per cent)					Port concentration indexes		
	Mombasa	Dar es Salaam	Tanga	Lindi & Mtwara	Kenya/Tanzania	Within Tanzania	All ports	
1953	70.6	19.7	7.0	2.7	76.72	71.69	73.68	
1958	71.6	20.1	5.2	3.1	77.03	73.93	74.62	
1963	73.9	18.6	4.8	2.7	78.38	74.35	76.40	
1968	68.3	26.5	3.0	2.2	75.21	84.70	73.36	
1973	64.7	30.9	2.7	1.6	73.70	88.25	71.77	
1978	56.3	38.4	3.7	1.5	65.62	88.64	68.28	
1983	65.2	31.7	1.9	1.2	73.90	91.33	65.54	
1988	61.0	36.2	2.1	0.7	72.40	92.97	70.97	
1993	62.8	35.2	1.3	0.7	71.99	94.78	72.01	

Sources: East African Railways and Harbours Authority, East African Harbours Authority, Kenya Ports Authority and Tanzania Harbours Authority.

Table 2
Traffic concentration at East African ports by type of goods, 1993

	Market shares (per cent)				Port concentration indexes			
	Mombasa	Dar es Salaam	Tanga	Lindi & Mtwara	Kenya/Tanzania	Within Tanzania	All ports	
Bulk cargo	64.6	33.6	1.6	0.2	73.6	94.81	72.83	
Liquid bulk	58.6	39.0	2.1	0.3	71.74	94.24	70.42	
Dry bulk	83.9	16.1	—	—	85.43	100.00	85.43	
General cargo	59.9	36.6	2.4	1.1	70.25	91.53	70.25	
Containers	59.0	41.0	—	—	71.85	100.00	71.85	
Conventional	61.2	33.4	3.4	2.0	72.46	86.69	69.83	
Overall traffic	62.8	35.2	1.3	0.7	71.99	94.78	72.01	

Sources : Kenya Ports Authority and Tanzania Harbours Authority.

3.7. TRAFFIC STRUCTURES COMPARED

Tanga and Mtwara are minor players, with an overall traffic of just 164,000 and 84,000 tons in 1993, whereas Mombasa and Dar es Salaam are the largest ports on Africa's Indian Ocean coast north of the South African border, with an overall traffic of 7.9 m and 4.5 m tons in 1993, respectively. These figures are in the range of the previous peaks of 8.2 m tons recorded in 1981 for Mombasa, and 4.5 m tons in 1992 for Dar es Salaam (table 3). These two ports are characterized by an imbalanced traffic structure, with more cargo being unloaded than loaded (5.2 m tons against 2.8 m tons in Mombasa in 1993, excluding transshipment, and 3.5 m tons against 1.3 tons for Dar es Salaam). This situation is true for bulk cargo and for general cargo.

Liquid bulk accounted for over 3.0 m tons at Mombasa in 1993 (of which crude oil for the local refinery accounted for 1.8 m tons) and for 2.0 m tons at Dar es Salaam (of which 1.1 m tons of crude oil were shared between the local refinery and that at Ndola, Zambia). Dry bulk amounted only to 1.3 m tons at Mombasa and 0.3 m tons at Dar es Salaam (table 3). Both ports have an important traffic of refined oil products, inbound and outbound (0.8 m tons overall at Mombasa and 1.0 m tons in Dar es Salaam in 1993), and they also feature some non-oil liquid bulk (0.2 m tons and 0.04 m tons respectively). As far as dry bulk is concerned, grain is the chief commodity in Dar es Salaam (where a dedicated grain terminal was opened in 1993), whereas this traffic is more diversified in Mombasa with grain and cement clinker imports and soda ash exports as the main commodities. In both cases, most dry cargoes, especially grain and fertilizers, are unloaded in bulk but are directly bagged at the quayside or elsewhere in the port area and they are therefore recorded as general cargo.

General cargo accounted for 3.6 m tons in 1993 at Mombasa and for 2.2 m tons at Dar es Salaam, that is 44.9 and 49 % of their overall traffic. As in most African ports, container traffic has increased substantially in recent years, from just 28.1 % of Mombasa's general cargo traffic in 1983 to 43.7 % in 1993, and from 13.9 to 49.7 % in Dar es Salaam (table 4). It accounted for 1.6 m tons and 149,300 TEUs in the Kenyan port, and for 1.1 m tons and 103,900 TEUs in its Tanzanian competitor, which is more or less in line with their specialized container quayage and handling equipment (three berths and four container cranes in Mombasa, with an average of three in working condition, and three berths and just two cranes in Dar es Salaam, with a third one on order). Despite the so-called "cannibalization" of some conventional traffic towards containers, conventional cargo remains strong in both ports, with 2.0 m tons in Mombasa and 1.1 m tons in Dar es Salaam in 1993, including a large amount of food products in both cases for famine relief operations, and copper exports through Dar es Salaam as transit cargo from Zambia or Congo. Conventional general cargo handling and transport has a greater local and national economic impact than containerized or bulk cargoes, and there is a strong case for ports in these developing countries not to put all their eggs in the containerization basket.

Table 3
Traffic at the two main East African ports, 1983-1993

	Mombasa					Dar es Salaam						
	Liquid bulk ('000 t)	Dry bulk ('000 t)	General cargo ('000 t)	Overall traffic ('000 t)	Liquid bulk ('000 t)	Dry bulk ('000 t)	General cargo ('000 t)	Overall traffic ('000 t)	Liquid bulk ('000 t)	Dry bulk ('000 t)	General cargo ('000 t)	Overall traffic ('000 t)
1983	3,092	932	2,470	6,494	1,628	56	1,471	3,155				
1984	3,023	804	2,721	6,548	1,666	-	1,800	3,466				
1985	2,576	1,175	2,588	6,339	1,321	31	1,806	3,158				
1986	3,227	760	2,943	6,930	1,718	27	1,731	3,476				
1987	3,102	833	2,983	6,918	1,510	9	2,082	3,601				
1988	3,184	762	2,826	6,772	1,889	1	2,054	3,944				
1989	3,633	748	2,857	7,238	2,075	12	1,913	4,000				
1990	3,389	1,075	3,061	7,525	1,857	-	1,884	3,741				
1991	3,538	781	2,825	7,144	1,847	116	1,894	3,857				
1992	3,372	1,112	3,508	7,992	2,256	370	1,976	4,602				
1993	3,057	1,343	3,589	7,989	2,032	257	2,196	4,485				

Sources: Kenya Ports Authority and Tanzanian Harbour Authority.

Table 4
Containers and other general cargo traffic at East African ports, 1983-1993

	Mombasa				Dar es Salaam			
	Containers — (‘000 t)	Other gen. cargo (‘000 t)	Overall traffic (‘000 t)	Share of containers (per cent)	Containers — (‘000 t)	Other gen. cargo (‘000 t)	Overall traffic (‘000 t)	Share of containers (per cent)
1983	693	1,777	2,470	28.1	204	1,267	1,471	13.9
1984	1,005	1,716	2,721	36.9	329	1,471	1,800	18.3
1985	1,124	1,464	2,588	43.4	506	1,300	1,806	28.0
1986	1,303	1,640	2,943	44.3	510	1,222	1,731	29.5
1987	1,254	1,729	2,983	42.0	597	1,485	2,082	28.7
1988	1,211	1,615	2,826	42.9	709	1,345	2,054	34.5
1989	1,409	1,448	2,857	49.3	696	1,217	1,913	36.4
1990	1,399	1,662	3,061	45.7	742	1,142	1,884	39.4
1991	1,390	1,435	2,825	49.2	840	1,054	1,894	44.4
1992	1,420	2,088	3,508	40.5	858	1,118	1,976	45.3
1993	1,567	2,022	3,529	43.7	1,091	1,105	2,196	49.7

Sources: Kenya Ports Authority and Tanzania Harbours Authority.

3.8. HINTERLAND COMPETITION

The major difference between the two main East African seaport gateways, however, in terms of their respective cargo throughputs, lies in the very different share of cargo loaded or unloaded for the national as opposed to the extra-national hinterlands. This reflects, particularly, the different levels of development in Kenya and Tanzania, the more so if liquid bulk, most of which is imported or exported to or from the two national economies (save for 0.6 m tons of crude oil for the Ndola refinery) is excluded. As can be seen in table 5, Kenyan traffic accounts for a high proportion (almost 77 % in 1993) of Mombasa's dry cargo throughput (that is dry bulk and general cargo, excluding transshipment), whereas Tanzanian imports and exports represent over 50 % of Dar es Salaam's activity. In both cases, transit traffic figures for 1992 and 1993 were inflated by food (especially grain) imports as a response to drought in Ethiopia and Southern Africa, respectively (PIRIE 1993), and reference to 1991 figures would therefore be more appropriate. They reflect the fact that there is usually twice as much transit traffic at Dar es Salaam as at Mombasa (1.1 m tons against 0.5 m tons in that year), and that transit traffic is vital for the Tanzanian port whereas it is rather marginal for the Kenyan port. This explains why there is substantial but differential pressure on both ports to serve the land-locked countries (LLCs) of their international hinterlands which, like many other African LLCs, are facing severe problems of transport dependence and access to ocean ports (GLASSNER 1993).

There is actually little competition between Mombasa and Dar es Salaam within their own countries, as both have an autarchical policy for port traffic as for many other matters. Whereas there is no Kenyan transit traffic at all at Dar es Salaam, table 6 shows a limited amount of Tanzanian cargo in Mombasa (24,000 tons in 1993), coming from north-western Tanzania whose natural gateway has always been the Kenyan port. The real competition is further inland, however, in eastern Africa's LLCs: Uganda, Rwanda and Burundi. Adding eastern Congo to these three countries is somewhat misleading as traffic to/from Kivu Province can for practical purposes only be directed through Mombasa (78,000 tons in 1993) and that to/from Shaba Province through Dar es Salaam (136,000 tons).

In contrast, the three above-mentioned LLCs — Uganda, Rwanda, Burundi — have a real choice between both ocean gateways, and their policy has been to diversify their access to the sea (CHARLIER 1992b & 1993) in order to avoid an exclusive dependency as used to be the case in the past, with Mombasa serving Uganda and Rwanda, and Dar es Salaam serving only Burundi. Historically, the northern corridor links Mombasa and Kigali through Nairobi, Tororo, Kampala and Kasese (VAN DONGEN 1963, TANDON 1973), whereas the central corridor links Dar es Salaam and Bujumbura through Tabora and Kigoma (HANCE & VAN DONGEN 1958). Both corridors are railway-based, with an optional link by

Table 5
 Import/export and continental transit traffic of dry cargo at the two main East African ports, 1983-1993 (excluding transshipment)

	Mombasa				Dar es Salaam			
	Kenyan traffic ('000 t)	Transit traffic ('000 t)	Overall traffic ('000 t)	Share of transit (per cent)	Tanzanian traffic ('000 t)	Transit traffic ('000 t)	Overall traffic ('000 t)	Share of transit (per cent)
1983	2,898	495	3,393	14.6	624	847	1,471	57.6
1984	3,024	485	3,509	13.8	827	974	1,801	54.1
1985	3,357	381	3,738	10.2	865	918	1,783	51.5
1986	3,250	420	3,670	11.4	749	983	1,732	56.8
1987	3,283	507	3,790	13.4	998	1,084	2,082	52.1
1988	3,106	360	3,466	10.4	849	1,200	2,049	58.6
1989	3,014	549	3,563	15.4	783	1,155	1,938	59.5
1990	3,505	595	4,100	14.5	962	922	1,884	48.9
1991	3,038	527	3,565	14.7	817	1,077	1,894	56.9
1992	3,311	1,210	4,521	26.8	967	1,379	2,346	58.8
1993	3,735	1,126	4,861	23.2	1,169	1,284	2,453	52.3

Sources: Kenya Ports Authority and Tanzania Harbours Authority.

Table 6
Dry cargo transit traffic at the two main East African ports, 1983-1993 (excluding transshipment)

	Mombasa					Dar es Salaam				
	Central Africa ('000 t)	Tanzania ('000 t)	Other ('000 t)	Overall ('000 t)		Central Africa ('000 t)	Zambia ('000 t)	Other ('000 t)	Overall ('000 t)	
1983	475	3	17	495		150	668	29	847	
1984	470	3	12	485		200	751	23	974	
1985	374	3	4	381		199	703	16	918	
1986	406	8	6	420		218	751	14	983	
1987	480	18	9	507		292	771	21	1,084	
1988	350	4	6	360		337	821	42	1,200	
1989	487	42	20	549		337	778	40	1,155	
1990	544	32	19	595		296	578	48	922	
1991	488	18	21	527		381	549	147	1,077	
1992	734	15	461	1,210		282	939	158	1,379	
1993	699	24	403	1,126		474	664	146	1,284	

Sources: Kenya Ports Authority and Tanzania Harbour Authority.

train-ferry on Lake Victoria between Kisumu and Jinja or Port Bell in the first case (HADER & MEIER 1986), and a final leg by barge on Lake Tanganyika between Kigoma and Bujumbura in the second one (DECOUDRAS 1984). These flows to/from Mombasa and Dar es Salaam form the main part of the traffic on these two lakes, whose potential for international exchanges is vastly underexploited (MILKOWSKI 1984).

Some diversification has recently taken place from a modal point of view as road vehicle operators have acquired an increasing share of the most lucrative traffic along these two axes, despite the higher cost of road transport and the major difficulties the road hauliers face when crossing Kenya (a series of controls and a high transit fee) or Tanzania (poor road conditions, especially in the centre of the country). Because of Rwanda's civil war in 1994, a new but difficult route has been opened to Rwanda and Burundi through Rusomo Falls, and the trucks linking Mombasa with these two countries no longer cross into Uganda but circle around the southern part of Lake Victoria to rejoin those coming from or going to Dar es Salaam.

However, a more significant diversification has been geographical, as an increasing share of Ugandan and Rwandan traffic uses Dar es Salaam and the all-Tanzanian routes whose cost and transit facilities are reputed to be better than those through Kenya. In the case of Uganda, this means crossing Lake Victoria between Port Bell and Mwanza, and using the Mwanza branch of the Tanzanian central railway. For Rwanda, there is now also on this branch line the alternative of the Isaka rail-road transfer facility which opened in January 1994 and is also used to serve Burundi. On the whole, Mombasa remains Uganda's chief gateway for dry cargo (with 475,000 tons in 1993 against 17,000 tons through Dar es Salaam) but most of Uganda's oil imports now pass through the latter port. Dar es Salaam has kept the bulk of Burundi's traffic with 163,000 tons in 1993 against 22,000 tons through Mombasa. It became in that year Rwanda's main transit port (with 158,000 tons against 124,000 tons through Mombasa), but the end of the civil war in Rwanda will allow traffic to/from Kigali to transit again through Uganda.

Intermodalism has become a key issue in hinterland competition (JANGUO 1994, MUMBA 1994), and the above-mentioned Isaka rail-road transfer facility is just one of the latest developments in this field, reflecting a strategy of structuring the hinterland through inland terminals that is now common in developed countries (HAYUTH 1980, RIDOLFI 1986, SLACK 1990, CHARLIER & RIDOLFI 1994). An inland container depot (ICD) opened in 1994 at Kisumu (OGONDA & ONYANGO 1994) and is connected with Mombasa by container block trains in order to serve the local as well as the international market, that is Uganda and even Rwanda (although it would be more logical to do so through a similar facility planned for Kampala).

The Kisumu dry port is a carbon copy, although smaller, of the Embakasi ICD opened in Nairobi as early as 1984 to serve the Kenyan capital area with

direct railtainer service from Mombasa. This ICD is operated by the Kenya Ports Authority itself which has realized that the battle for intermodal traffic cannot only be won at sea or in the ports but has to be fought deep inland as well. The KPA is planning to operate another ICD in Eldoret, to which point the Mombasa-Nairobi oil pipeline has been extended, with a branch to Kisumu, again with an eye on transit traffic (by rail from Eldoret or by tanker barges from Kisumu).

A similar strategy of involving itself in the operation of inland facilities has not yet been followed by the Tanzania Harbours Authority which is not running the lake ports of Kigoma and Mwanza and is involved neither in the new Isaka rail-road transfer facility nor in Mbeya's dry port on the TAZARA railway. Together with a Malawi Cargo Centre in Dar es Salaam, the Mbeya facility is used for Malawi's transit traffic which is a welcome addition to the TAZARA traffic. In contrast to Kenya, no ICD is planned in the national capital of Dodoma, a development widely seen as a political and economic failure (HOYLE 1979, KIRONDE 1993), or elsewhere inland, except perhaps in the Moshi/Arusha area where such a facility could be served by rail from Dar es Salaam as well as from Mombasa, thus reinforcing the above-mentioned "shadow effect" already hindering the development of Tanga.

Table 6 shows that Malawian traffic (indicated as "other") through Dar es Salaam has risen sharply in the 1990s, whereas Zambian dry cargo diminished following a year in which substantial quantities of maize were imported because of the drought in southern Africa. This downward trend in the 1990s is because Zambia is now gradually re-orienting its traffic towards South African or Mozambican ports, after turning to a large extent to Dar es Salaam in the 1970s and 1980s following the building of the TANZAM road, the TAZARA railway and the TAZAMA pipeline, as is well documented (GRIFFITHS 1969, HARKEMA 1972, LEGUM 1973, HOYLE 1978, MWASE 1984 & 1987, GRIFFITHS 1990, CHARLIER 1992a). The main factor explaining Zambia's northward orientation towards Dar es Salaam was the unilateral declaration of independence by Southern Rhodesia (now Zimbabwe) in 1965 that cut Zambia's access to South African ports, but the former Northern Rhodesia also lost its former Portuguese gateways because of the civil wars in Angola and Mozambique, leaving Dar es Salaam for a time as the only possible outlet. The emergence of the new South Africa, and improved relations between Zambia and Zimbabwe, have altered this situation substantially.

From just 97,000 tons in 1966, Zambian dry cargo rose to almost 1.4 m tons in 1977 (HOYLE 1983, p. 177), but has usually been below the 1.0 m tons mark since that historic year. The TAZARA railway's operational problems are another limiting factor for transit traffic with Zambia and the rise of Malawi's traffic is only a partial compensation for the loss of much of the Zambian traffic. Therefore, increasing transit traffic with Rwanda, Burundi and Uganda is of vital importance for Dar es Salaam and this places these land-locked countries (especially Uganda and, to a lesser extent, Rwanda) in a strong bargaining position.

4. Conclusions

This memoir has attempted to survey a series of inter-related issues involving port development, port-city interdependence, coastal zone management and interport competition in Africa, using the East African countries as a particular source of examples and relevant data. Arising from the earlier parts of the memoir, several aspects of the inter-relationships between cityports and African development may be underlined. The impressive expansion of individual port cities which has occurred during the 20th century has played a vital role in promoting mutually beneficial interlinkages between African countries and the global economy. The port system has made available to world consumers a variety of resources essential to economic growth. The bulk transport of iron ore — through, for example, Nouadhibou (Mauritania), Buchanan (Liberia), Saldanha Bay (South Africa) — has been of far-reaching significance. Another key feature has been the export of agricultural produce — for example, coffee through Mombasa (Kenya), cocoa through Tema (Ghana); while the dramatic rise in energy imports, notably crude oil, has become a widespread component of African port throughput structures.

These trends have not affected the African cityport system evenly. Some countries, cities and port authorities have made impressive investments in infrastructure, making their ports attractive to new generations of ships, and cityport growth poles of this kind have become especially important for African development. The quality of transport links between ports and hinterlands have also, of course, been highly significant. Those cityports enjoying the best rail, road and pipeline access have been able to attract an increasing proportion of maritime traffic, and have also been able to promote the introduction of interior container depots (ICDs) as a means of improving hinterland transport efficiency. Meanwhile, as figure 11 suggests, the degree of port-city interdependence varies substantially.

The African cityport system is a dynamic phenomenon, constantly changing in response to a variety of factors on the landward and seaward sides. Through the centuries the essential pacemakers have been the maritime factors: port cities are orientated towards the world's seas and oceans, and they belong primarily to the world of maritime transport and trade. New technologies of ship design and cargo handling have led to successive eras of cityport evolution, and modern cityports have become an integral and important part of the continent's economy. Africa's seaports and cityports are continually involved, however, in a process of inter-port competition. Modern seaports, like those in the past, survive by attracting traffic; those which fail to do so decline or stagnate. Decision-making by ship operators and hinterland transport companies, as well as by

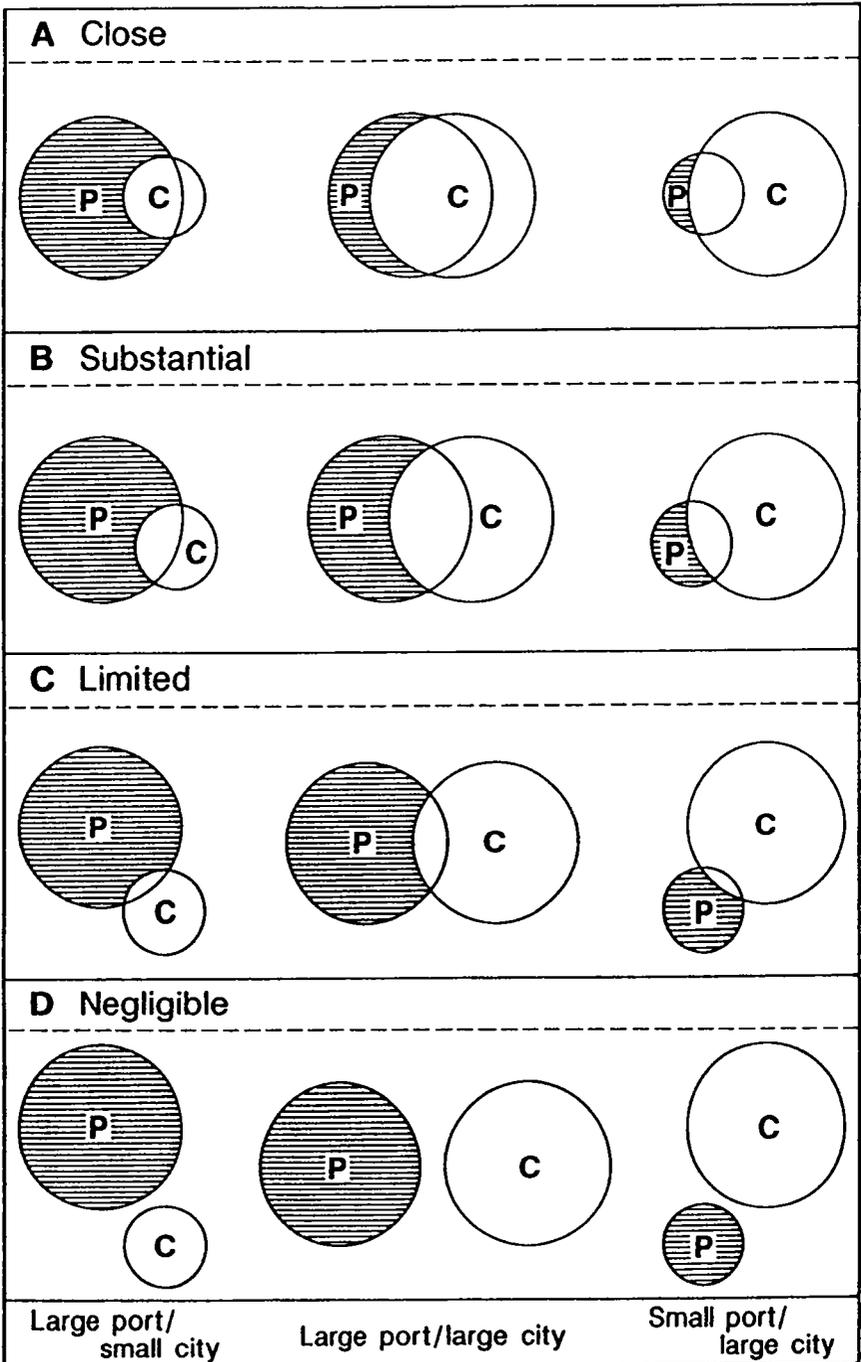


Fig. 11. — Degrees of port-city interdependence.

commodity producers and consumers, yields a port selection process with advantages for some port cities but disadvantages for others. Political factors, too, affect the ways in which ports are used, in numerous ways: the complex surface transport systems which Africa has inherited from the colonial past continue to shape present-day traffic flows; governments of inland states manipulate commodity flows in their anxiety to preserve access to ocean ports; and instability and warfare, notably in Angola and Somalia, continue to prevent the use of some seaports for normal economic purposes.

Another negative factor of widespread importance is the relatively weak state of most African national economies. Although a few tropical African countries, notably Nigeria and Congo, are sometimes cited as being potentially among the industrial giants of the 21st century, their enormous resources are of little value without internal political stability and orderly economic development planning. Other, much smaller countries, such as Côte-d'Ivoire and Kenya, have made substantial economic strides but, as they aggravate their highly uneven development surfaces, their apparent prosperity remains fragile. The emerging new South Africa may yet become the economic salvation of the continent. At present, however, political instability is the prime cause of slow economic progress, for capital investment will not venture where it may be misused, and Marxist approaches have blatantly failed. The economic condition of the continent as a whole is such that, as far as port cities in the developing world are concerned, no African location has yet emerged to rival the cityport emporia of Latin America or the New Pacific, and no African country (with the possible exception of South Africa) can yet claim to be a newly-industrializing country (NIC) in the full sense in which that term is understood in southern and eastern Asia. "The absence of any true NICs and hence dynamic cities operating increasingly within the system of core cities which controls international circuits of capital, commodities and skilled labour, such as Singapore, Hong Kong or São Paulo, is clearly related to Africa's global economic peripherality ... Despite the growth of international communications ... Africa is for the most part becoming relatively even more peripheral at present" (SIMON 1992, p. 4).

If this is so, then the outlook for African port cities in the immediate future is not very bright. In the longer run, things may improve. Meanwhile, from a physical planning perspective, perhaps the most critical issue affecting the African cityport today is the overconcentration of port activity in a single national port city, or at best in a limited hierarchy of port cities. Africa has long suffered from a tendency towards the overconcentration of urban growth in a very limited number of large centres; and the tendency towards port concentration is enhanced not only by established African urban trends but also by global maritime transport factors. Although some African countries have successfully introduced new ports for specific purposes or in a context of regional development, it remains very difficult for African governments and their financial advisors and supporters to move against established trends towards concentration, as the case

of the proposed port of Manda Bay (Kenya) demonstrates (HOYLE 1981). This problem of geographical concentration versus dispersion of port-city growth, and more widely of economic development as a whole, remains a critical issue for development planners in African countries today, and strategies adopted for its solution will profoundly affect the character of Africa's port city system in the future.

The later sections of the memoir have attempted to survey the question of interport competition in developing countries, using the well-documented East African case study as an illustration of the dynamic relationships that link ports, hinterlands and national economic areas. The principles on which the argument rests are, firstly, that port concentration is an outcome of investment in port facilities and in related transport infrastructures; secondly, that the competitive position of a port is critical to its commercial survival; and, thirdly, that in the specific case examined here, there is a substantial degree of continuity between past and present in terms of the factors, processes and inter-relationships under review.

Some elements involved in the temporal and spatial changes discussed are illustrated in figure 12 which, as a derivative of the TAAFFE *et al.* (1963) and BARKE (1986) models, shows how the broad pattern of inter-connection and balance between maritime trade routes, seaports major and minor, and hinterland transport routes has gradually evolved over the centuries.

1. The five-stage model indicates, firstly, a scatter of relatively undifferentiated coastal and island ports in late medieval times, connected by coastal sailing routes and with limited hinterland connections;
2. A second stage represents the mid-19th century dominance of Zanzibar, now seen with hindsight as a temporary but critical interlude, involving substantial and widespread hinterland trade generation;
3. A third phase reflects the concentration of port activity upon two principal ports, Mombasa and Dar es Salaam, selected as rail terminals linked to the far interior, to the considerable detriment of other mainland and island ports in the region;
4. The dominance of these two ports is emphasized in the fourth stage, representing the decade of political independence, and marks the beginning of significant interport competition;
5. The fifth stage indicates the current situation involving the extension and diversification of the hinterland, an enhanced degree of competition between the two major ports and the almost negligible significance of others, the increasingly widespread introduction of inland "dry ports", and the proposal (so far largely unsupported) to introduce a major new port-industrial complex on the north Kenya coast.

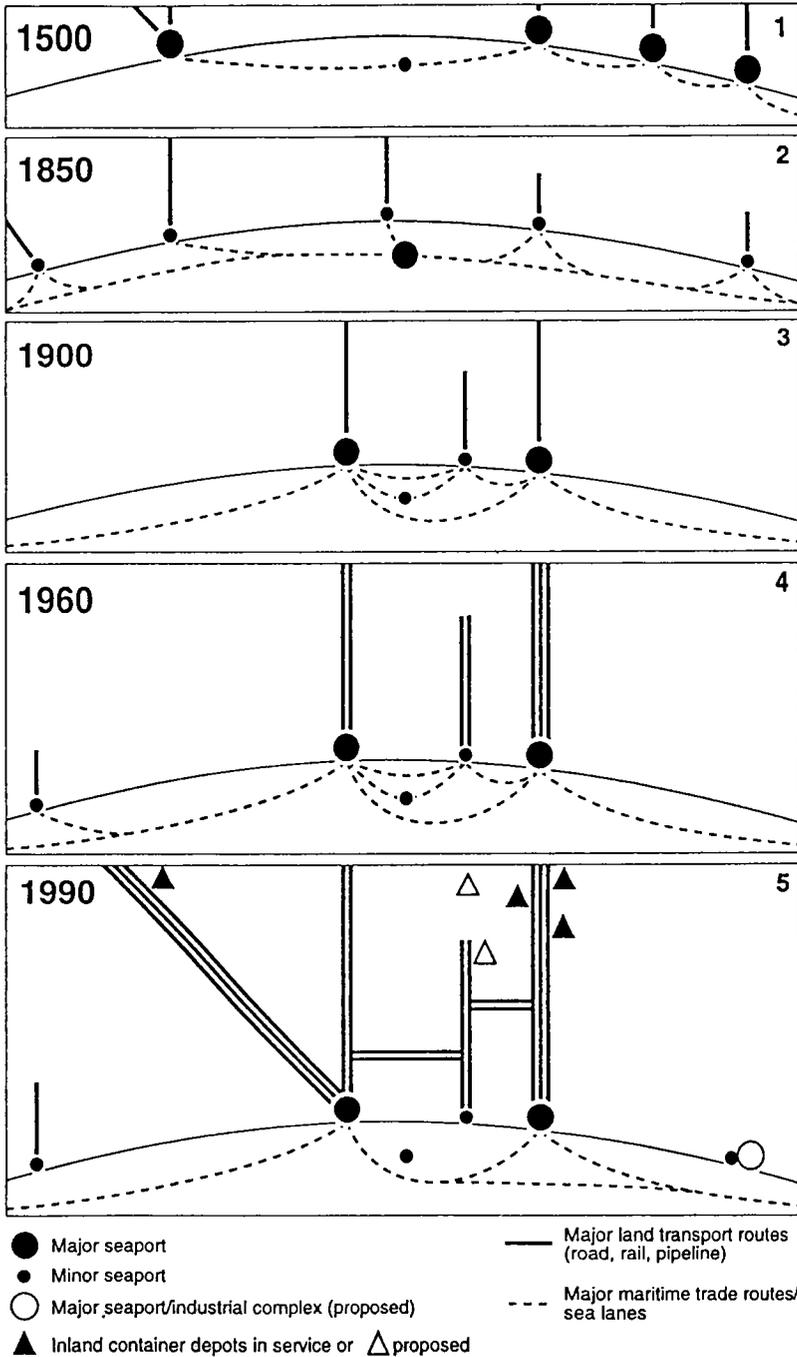


Fig. 12. — A sequential model of port development, interport competition and hinterland transport systems in East Africa over five centuries.

Two essential dynamics underpin this process. One is the changing nature of the relationships between the ports themselves, relationships that hinge primarily on the question of the competitive position that each can develop and maintain. The second is the changing nature of the relationships between the East African seaport system as a whole and the complex socio-economic and political development surface of the hinterlands that it serves. These two dynamics transcend the interconnected dimensions of time and space, and are themselves ultimately linked by the evolution of transport (especially maritime) technology.

The East African area has been utilized as an illustration of the principles involved in port development, port city growth and interport competition, and it is pertinent to enquire as to the relevance of the themes discussed in other parts of the developing world. It is recognized that the themes highlighted here are highly relevant, for example, to the study of the transport geography of other parts of the African continent, notably southern and western Africa, and indeed elsewhere throughout the developing countries. Although questions of inter-regional comparisons cannot be entered into here, it must nevertheless be emphasized that East Africa offers a particularly clear and timely illustration of port-related transport changes in the developing world. Whether appropriate comparisons can be made between the experience of the advanced countries and that of those countries presently characterized as less-developed is, of course, a quite different and more sensitive question.

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