Department of Geography
University of Southampton

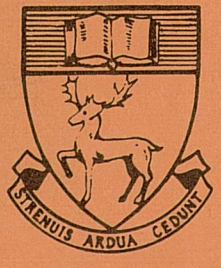
SEAPORT STUDIES AT SOUTHAMPTON

A RESEARCH REVIEW

B.S.Hoyle

No.18

Discussion Papers



ISSN 0140-9875

SEAPORT STUDIES AT SOUTHAMPTON

A RESEARCH REVIEW

B.S.Hoyle

No.18

The Editor
Discussion Papers,
Department of Geography
The University,
Southampton,
SO9 5NH

Price 75p

PREFACE

This paper is a revised and extended version of a research report presented in December 1982 in the joint context of the Department's Research Seminar Series and the M.Sc. programme in Geography and Education. The geographical study of seaports and seaport systems is recognised as one of the Department's major interests in the context of research in human geography, and several members of staff and a number of research students and assistants are involved in work in this field or have recently contributed towards its development. An attempt is made in this paper to review the development of port geography and port-related research at Southampton in the context of the wider fields of urban and transport geography within which this work is set; to identify a series of themes emerging from recent research; to indicate some present trends; and to look towards the future in terms of research plans and priorities. It is not intended in this paper to attempt an analysis of the entire field of port geography, or to review the recent literature of this field as a whole. Many of the works cited in reference themselves contain extensive bibliographies on general and particular themes, and no purpose would be served by reproducing those bibliographies here. In order to place the Southampton contribution to port studies in a wider context, however, reference is made at various points in this paper to comparable and related work undertaken elsewhere.

Given that Southampton is a seaport and a university city, it might reasonably be expected that some attention would be given to port studies in the research and teaching programmes of the Department of Geography. In many cityports in the United Kingdom and around the world where centres of higher education and research are located (examples include London and Liverpool, Nantes and Marseilles, Hong Kong and Lagos), geographers have shown considerable interest in the study of ports and port systems both in relation to their immediate environment and in a wider systematic context. Southampton is no exception, and the University has long maintained a substantial interest in port-related research. This extends, in fact, far beyond the sphere of geography to include research in such diverse fields as economics and law, engineering and ship science, transportation and navigation, and urban and regional planning. In the specific context of geography, however, the study of seaports has recently been identified as one of the Department's principal research themes in human geography, and this has been recognised by the Social Science Research Council and by the University Grants Committee.

In this context, the purpose of this paper is to attempt to review the way in which port geography has been pursued at Southampton, to provide an assessment of the work that has been completed and to look towards research possibilities for the future. Although relatively few present members of the Department would choose to describe themselves as port geographers, many would recognise that their work is in part quite closely related in a variety of ways to the characteristics, functions and problems

of ports. In one sense port geography is but a minor component of the broader fields of urban, economic and transport geography; yet in a wider context the study of port phenomena is dependent upon, and contributes to, a variety of other elements in the modern structure of the subject. Like geography as a whole, port geography reaches out beyond narrow definitions to develop inter-relationships not only across the broad spectrum of geographical science but also with a number of related disciplines. No false distinction is made in this review, therefore, between port geography and port-related studies in geography; but some attempt is made to indicate how research at Southampton is related to work undertaken elsewhere and how the geographical study of ports is linked with approaches adopted by other subjects.

Some elements in port geography

Port geography is concerned fundamentally with what happens at the waterfront, across the frontier between land and maritime space, wherever trade is regularly carried out, whether that interface is set in a technologically primitive context or in a context of advanced transport systems. Beyond this land/maritime interface, some of the elements involved in the geographical study of ports and port systems are indicated in a very simplified way in Figure 1. The port is represented as a node located at the land/maritime interface along with other ports which have experienced differential development. Ports are shown to vary in size and in the extent to which they are associated with urban development, and interport competition is affected by locational characteristics of

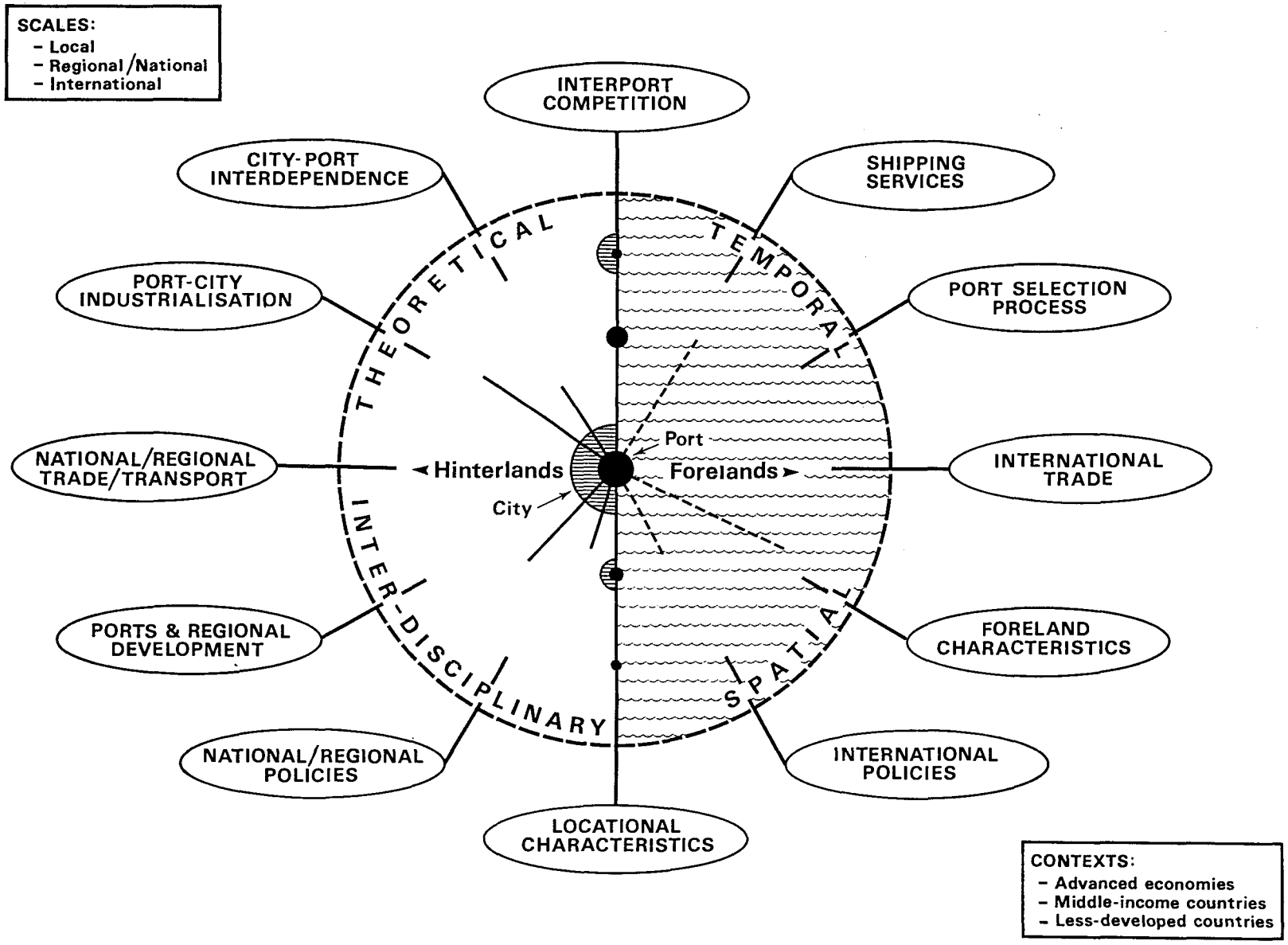


Fig.1 Some elements in port geography

various kinds, notably the conditions of land and water sites and the characteristics of hinterland transport systems.

A basic division in port geography is between those elements derived from the hinterlands and those derived from the maritime side. On the landward side, important research areas are suggested by the box-labels: city-port interdependence, port-city industrialisation, transport networks and trade patterns, relationships between ports and regional development, and the impact of policy formulation and decision-making at various levels on the port development process. On the maritime side, port development is first and foremost dependent upon ships - in the dual context of ship design and shipping services - and upon the process of port selection as perceived by ship-operating companies. The global patterns of international trade are obviously an important influence, as are the specific characteristics of foreland areas beyond the seas with which ports are linked. The international political dimension includes bilateral relations, group arrangements such as those within the EEC, and global policies derived from the United Nations and its agencies. All these elements in port geography are open to investigation at various scales ranging from the local to the global; all relate to countries and areas throughout the development spectrum from the most advanced to the least developed; and all are subject to interpretation in several dimensions, four of which are indicated in Figure 1: theoretical, temporal, spatial and interdisciplinary.

The development of port geography at Southampton

Not surprisingly, not all of these wide-ranging elements in port geography are represented at Southampton, but a reasonably high proportion are reflected in one way or another in the research output of the Department. No contributions to port geography from Southampton geographers have been traced from the period before the First World War when Mr (later Professor) C.B. Fawcett was Lecturer-in-Charge; but in the later 1920s Mr (later Professor) G.H.J. Daysh wrote a short book on the historical development of Southampton (Daysh, 1928) and a paper on the future of the port (Daysh, 1929), an exercise in academic crystal-gazing which turned out in the event to be broadly accurate. Then in the 1930s Professor Percy Ford, within whose Department of Economics the teaching of geography was for a while subsumed, edited a survey of Southampton (Ford, 1931) and published his classic study of work and wealth in the port-city of Southampton (Ford, 1934), based on his doctoral thesis on the economics of social deprivation. One of the contributors to Ford's 1931 survey was Dr. O.H.T. Rishbeth, professor of geography in the University, who provided a chapter on urban land utilization (Rishbeth, 1931) while details of the port were supplied by F.E. Wentworth Shields (1931). A closer link with those early days is provided by Dr. L.E. Tavener who was a member of the Department from the 1920s to 1969, and who publihsed in 1950 one of the first substantial papers on the modern port of Southampton to appear in English (Tavener, 1950). Some years earlier, a general account of the port and its trade had appeared in the Annales de Géographie (Cottier, 1936).

These early forays into the port geography of Southampton serve merely to introduce the much broader and more complex pattern of recent research and publication in port-related fields. Modern port geography at Southampton derives essentially from the appointment of Professor J.H. Bird to the chair of geography in 1967 at a time when his work on the major seaports of the United Kingdom (Bird, 1963) was already widely recognised. Since that time Professor Bird has made many contributions to the literature of port geography, some of which are listed in the bibliography, with a particular emphasis on systematic and theoretical approaches and on the ports of advanced countries. The scope of the Department's research interests in ports was extended in 1969 by the appointment of Dr. B.S. Hoyle who had previously worked on problems of port development in tropical Africa (Hoyle, 1967). This dual focus in port geography at Southampton, on the UK/West European area on the one hand and on tropical less-developed areas on the other, has been maintained and extended throughout the 1970s and beyond with the co-operation of research students and several other members of staff. Important contributions to the West European focus of port research have been made by Dr. D.A. Pinder, whose interests in regional development planning and modern industrial growth involve close links with the Netherlands, most notably in this context with the problematic port of Rotterdam. Dr. J.M. Wagstaff has included port-related studies in his research on Greece and the Middle East; and Dr. Hoyle's interests in the ports of less-developed and other formerly colonial areas have extended to South-east Asia and to Australia, with special reference to

tropical Queensland. Dr. Wagstaff has also contributed to the elucidation of the historical geography of Southampton (Wagstaff, 1971); and the departmental focus on research in urban geography has recently been extended by Dr. M.E. Witherick to include studies of port-city inter-relationships in Southampton (Witherick, 1981a and b).

Theories of port development

Several distinct themes have emerged from the work of members of the Department in the field of port geography in recent years, and it may be argued that the most significant of these is the well-established and continuing emphasis on the theoretical basis of the subject. Southampton geographers have contributed in a number of important ways to the development of theory in port studies, and some of their publications are frequently cited wherever port geographers attempt to extend the frontiers of research. It was in 1959, when the Annual Conference of the Institute of British Geographers was held in Southampton,[1] that Dr. J.H. Bird (then a Lecturer at King's College, London) presented an outline of his Anyport theory which was widely acclaimed as an original, useful and highly adaptable framework for the analysis of the morphology of port layouts over time. The theory provided the basis for Professor Bird's substantial study of the major seaports of the United Kingdom (Bird, 1963), and was also used in a very different context as a framework for his subsequent study of the seaport gateways of Australia (Bird, 1968) which linked the foundation of Australia's first port at Sydney Cove in 1788 with the ramifications of the modern seaport industrial machine in the context

---

[1] This was the first occasion on which the Conference was held in Southampton; more recently the Conference came to Southampton in 1982.

of national development. Meanwhile Dr. Hoyle had adapted and developed the Anyport theory to describe and explain the development of a series of ports on the Indian Ocean coast of East Africa (Hoyle, 1968), and similar attempts were made by other researchers to apply the theory in other parts of the world (Dickson, 1965; Hilling, 1969; Ogundana, 1971). Recently Bernd Wiese (1981a) has used the model to illustrate his analysis of the South African seaport system.

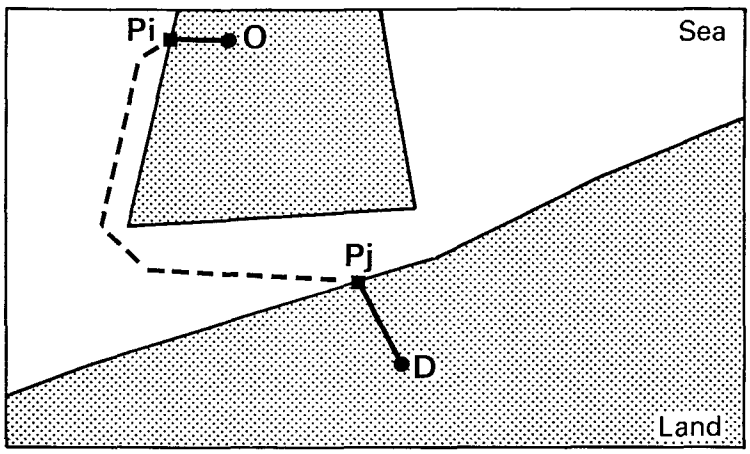
Professor Bird's interests in theoretical developments in port geography led to other work, notably his book on Seaports and seaport terminals (Bird, 1971) in which the emphasis on theoretical approaches is dominant. The book was intended as the first modern theoretical work on the geography of ports, and as such it still stands although now in need of revision and updating. Some comparisons may be suggested between this important volume and other wide-ranging works on seaports and sea transport including Couper (1972), Verlaque (1975), Vigarié (1979) and Vallega (1981). The concept of ports as gateways in association with growth poles and in a variety of other economic contexts, is one that occurs repeatedly in Professor Bird's writings and is the subject of two recent reviews of theoretical developments in port geography (Bird, 1980 and 1983).

Other recent contributions to the theoretical basis of port geography have emanated from the SSRC-sponsored SEDEC project designed by Professor Bird and completed with the assistance of Miss Angela Bannell and Dr. Elspeth Lochhead. This major project on seaports and development in the

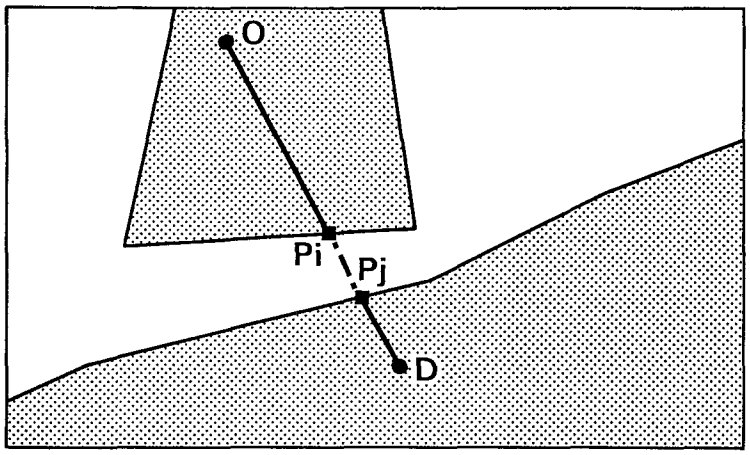
European Communities started out from the premise that desk studies of the problems facing the seaports of the EC had reached a stage of requiring evidence and opinion from decision-makers in the ports and shipping industries. Structured questionnaires were applied and open-ended interviews held with 80 respondents in a range of ports. One of the techniques used was to confront each respondent with a series of carefully-worded propositions, and the content of the tape-recorded answers was subsequently analysed. Details of the methodology are set out in a series of recent papers (Bird, 1982a and b; Bird, Lochhead and Willingale, 1983). The study concluded that decision-makers in the ports and shipping industries have a great deal to offer in helping to shape future EC policies about seaports; and that decision-makers within the industries, and students of the subject outside the industries, are broadly in agreement that a step-by-step approach towards a Common Seaports Policy is possible.

A related project, also recently completed, is the investigation by Dr. M.C. Willingale of the port-selection process in the context of the UK/Europe short-sea trades. This original study is an important contribution to behavioural science as well as to port geography; in a recently-published paper (Willingale, 1981), Dr. Willingale presented a macro-theory of port-routeing (Fig. 2) - deceptively simple in outline but complex in application - and the results of interviews with ship-operating companies have proved interesting to academics and industrialists alike. This theory provided a basis for Dr. Willingale's doctoral thesis

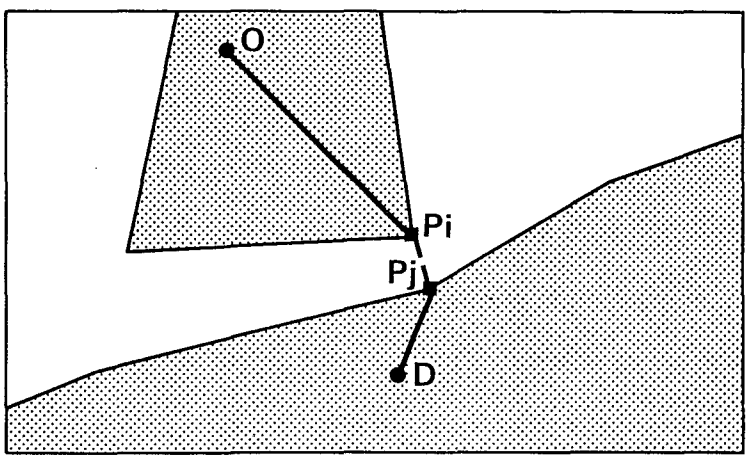
Key: **O** = origin of traffic movement. **D** = destination of traffic movement. **Pi** and **Pj** = intermediate port locations.



Nearest port



Direct port alignment



Shortest sea crossing

Fig.2 A schematic diagram of short-sea macro port-routeing (after Willingale, 1981)

(1982) which analysed the port-routeing decision-making process through the medium of recorded interviews with decision makers in the shipping industry. The arguments that ship operators are the primary decision makers in a hierarchy affecting port-routeing, and that land transport operators may appear merely to respond to a pattern of shipping services decided upon by shipping lines, are carefully scrutinised. Dr. Willingale made very good use of interview techniques and subsequent content analysis, and extracted many valuable insights from open-ended interviews with company representatives. These two examples of recent contributions to the theoretical content of port research at Southampton together underline the growing importance of behavioural approaches and the degree to which perceptions of ports from the maritime side are at last beginning to occupy an important place in port research programmes.

The French connection

At this point in the discussion it is appropriate to introduce the French connection which is an important factor in port-related research at Southampton and is directly relevant to much that has been achieved in the past. There are long-standing links between the Department of Geography at Southampton University and the equivalent Instituts de Géographie in several universities in France, most notably those located at Rouen and Aix-en-Provence.[2] These links have involved, at various times and amid many other activities, co-operative research on ports with the welcome assistance of French port geographers. In the mid-1970s Dr. (now Professor) I.B. Thompson (who was a member of the staff of

---

[1]Now respectively the Université de Haute Normandie and the Université d'Aix-Marseille II.

the Southampton Geography Department from 1963 to 1976) and Dr. J.N. Tuppen (who was an undergraduate and later a postgraduate member of the Department, and is now a Lecturer in Geography at Salford University) carried out a number of port-related research projects including a detailed study of the Lower Seine industrial axis linking the river port of Rouen with Le Havre (Tuppen, 1974). There followed some further work in the south on the port of Marseilles and the rise of the industrial port complex at Fos (Thompson, 1975; Thompson and Tuppen, 1973; Tuppen, 1975). More recent perspectives on these themes have been provided by several French geographers whose contacts with the Southampton department are well-established (Gay, 1981; Verlaque, 1981; Wolkowitsch, 1979 and 1981). Some years earlier, Dr. Hoyle had undertaken research on the expansion of the port of Marseilles beyond the confines of the traditional basins towards the Etang de Berre and the Rhone delta (Hoyle, 1960), and this work still provides a useful historical background to more recent research and fieldwork through which the French connection is actively maintained.

The cityport theme

Links with France, and the wider importance of international co-operation in port research, lead into some discussion of the cityport theme which has been an important element in recent work at Southampton. The concept of the interdependent city-port and of the port-urban interface as a research field of some considerable potential have been gaining ground in recent years. Hayuth (1982) has recently drawn attention to ways in which the long-standing spatial and functional ties between ports and cities are gradually weakening as a result of technological developments

in ocean transportation, the emergence of intermodal transportation systems and the growing public recognition of the waterfront as an urban asset. The port-urban interface area has thus become a zone in transition and a planning problem within the dual context of urban redevelopment and coastal management. Other writers on this theme include Norcliffe (1981) and Slack (1980). An earlier expression of the Department's concern for co-operative efforts in this direction was an international seminar on city-port industrialization held at Southampton in 1979 with support from the Social Science Research Council. Within the framework of the Council's Anglo-French conference and seminar scheme, the meeting attracted about 20 participants mainly but not exclusively from Britain and France. Papers presented at the Seminar, subsequently revised and in some cases extended, were published in a substantial volume in 1981 under the joint editorship of Dr. Hoyle and Dr. Pinder (Hoyle and Pinder, 1981a), and several are individually cited in the present paper. The book demonstrated a widespread concern for spatial inter-relationships and for development over time, and many of the problems discussed illustrated the significance of city-port interdependence in relation to industry, planning and the wider perspectives of regional development. Figure 3, reproduced from Hoyle and Pinder (1981a), is an attempt to summarise how, at various scales and in both spatial and temporal terms, a wide range of interdependent factors affect the growth of transport networks and cityport systems.

The cityport theme re-emerged in the Southampton essays edited by Dr. C.M. Mason and Dr. M.E. Witherick (Mason and Witherick, 1981),

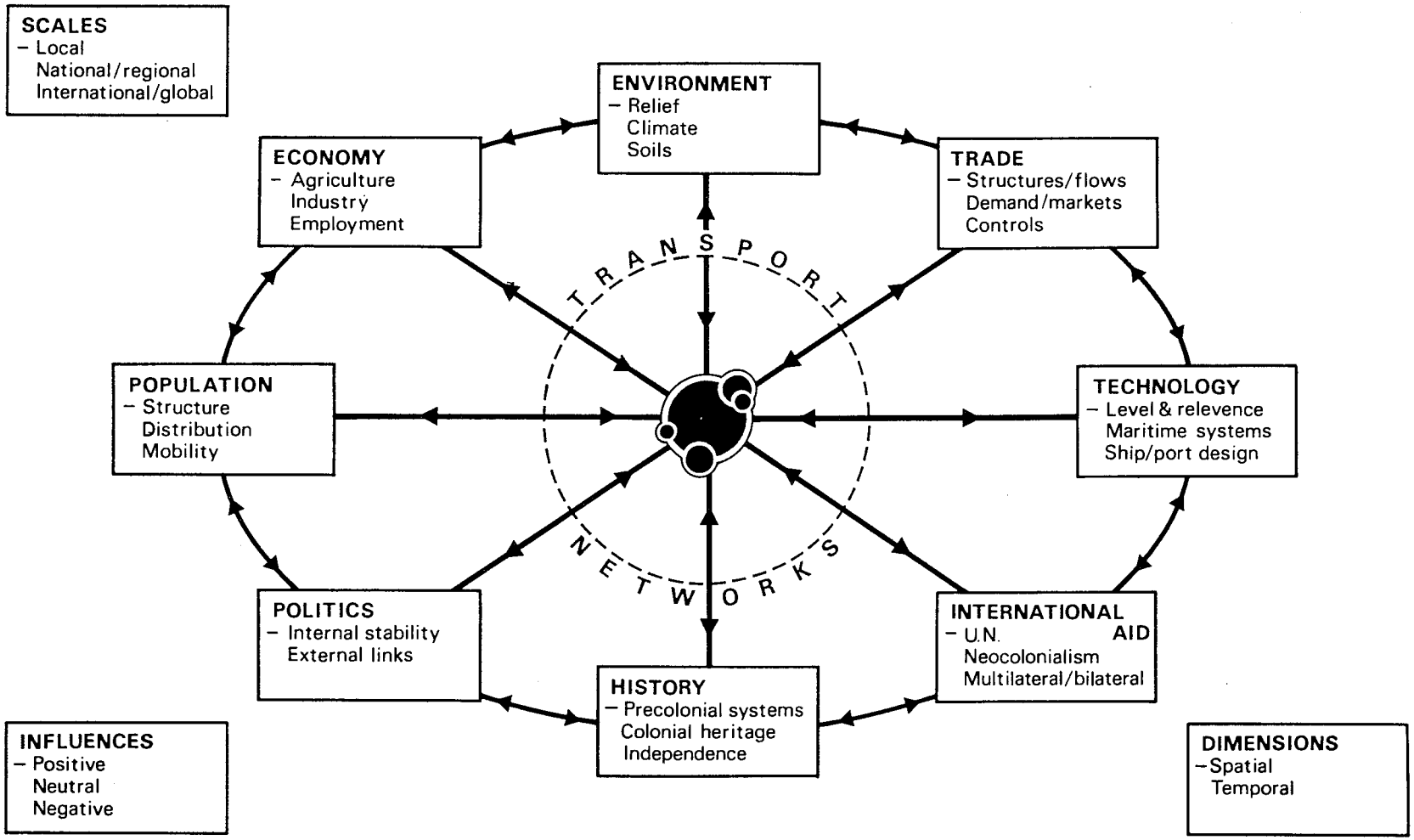


Fig.3 The world cityport system: some factors in development

published under the title Dimensions of change in a growth area, which illustrated in a varied context how much the port-city interface in Southampton might benefit from further research. On the European continent, Dr. Pinder's work in the Netherlands, with special reference to Rotterdam and the Europoort complex, has included some important new perspectives on port development in relation to the communities they serve; his paper on community attitude as a limiting (rather than encouraging) factor in port growth is a perceptive and original contribution to the recent literature (Pinder, 1981). The interlinkages between cityports and industries inevitably pervade these various contributions to the cityport theme, since employment in industry is one of the essential mechanisms by which ports and industries are connected.

Ports and regional development

Beyond the limits of port-city relationships we have been concerned to explore the significance of ports in terms of regional economic growth, and the theme of ports and regional development is one that has come to occupy a good deal of attention. In planning the 1979 cityport conference, and in editing the resultant papers, members of the Department attempted to direct the thoughts of contributors towards the wider implications of the port industrialization process, in the context of growth-pole strategies and other theories of regional revelopment. One of the most clear-cut examples came from our former research student Dr. John Tuppen who examined the role of the port of Dunkerque in the industrial economy

of the Nord - Pas de Calais region of France (Tupper, 1981). His conclusion, that Dunkerque is a relatively isolated rather than an integrated component in the region's economic structure, is familiar to those who have examined port problems in other parts of the world. Professor Bird's comprehensive study of Australian seaports (Bird, 1968) demonstrated a notable lack of interest on the part of most Australians in the developmental role of their ports: "Australia is a maritime nation and scarcely knows it", he commented, calling for a national port development strategy that would take full account of the growth pole potential of Australia's cityports.

The extent to which port development patterns are a reflection of regional development strategies, and the extent to which (if at all) they are able to initiate new trends, is a theme recently examined by Dr. Hoyle in two contrasted areas. In tropical Australia the port development process has been traced through a series of evolutionary phases which reflect directly the development experience of the inland (as Australians term the tributary areas); in Queensland the ports concerned are primarily (and sometimes exclusively) sugar-exporting terminals, and their role is critical in the efficient operation of the sugar industry. In contrast, a number of African countries in recent years have attempted to use the concept of the cityport growth pole, based upon a new port located on a 'bluecoast' site and associated with a variety of inter-related regional development projects. The port of Tema in south-east Ghana is perhaps the best-known example (Hilling, 1966 and 1970); the proposed port of

Manda Bay in north-east Kenya seems to be a more doubtful proposition (Hoyle, 1981); in South Africa, however, Richards Bay and Saldanha have achieved a measure of success (Wiese, 1981b).

Ports and policies

The theme of ports and policies, one that in a sense cuts across much that has been written already, in some ways serves to unify the divergent approaches of port geographers. We are all attempting in different ways to analyse recent trends and present patterns in order to contribute towards policy formulation and decision-making - either positively, through confirming and explaining established trends, or contrariwise by arguing against the directions in which port policies appear to be leading.

It can be demonstrated that the Southampton department has contributed in various ways to the understanding, wider discussion and possible modification of policies affecting ports at several levels ranging from the local through the regional and national to the international. Members of the Department have taken an active interest over many years in the overall planning structure of the South Hampshire/Wessex region (Davies and Robinson, 1968; Mason and Witherick, 1981). At the level of the individual port or port complex several studies included in the recent volume on cityport industrialisation (Hoyle and Pinder, 1981a) have already been mentioned: Dr. Pinder on Rotterdam, Dr. Tuppen on Dunkerquue, Dr. Witherick on Southampton. A very relevant addition to the list, not previously mentioned, is Dr. M.S. Husain's study of 'Influences on

development policy in the port of Hamburg' (Husain, 1981) which demonstrates the effectiveness of a positive multifaceted port development policy in relation to regional development and in the context of stiff international competition. In a contrasted environment, Dr. Hoyle has recently examined two strategies (Fig. 4), again simple in outline but complex in application, which less-developed countries have employed to relieve pressures on multifunctional primate cityports. The removal of the political capital function to an inland location, as in the case of Tanzania (Hoyle, 1978), is a strategy that has been adopted in the past by several countries (including Australia and Brazil) and is currently being employed by Nigeria. An alternative strategy for the relief of pressure on existing and often primate cityports is of course the creation of additional port outlets on 'bluecoast' sites. This policy has been pursued in recent years by several African countries as indicated above in the context of regional development.

In the context of the European Communities Professor Bird has analysed the contrasted port policies of the constituent states (Bird, 1967 and 1977) and his recently-completed SEDEC project was specifically concerned with the analysis of the decision-makers' viewpoints, within port authorities and within ship-operating companies, and with arguments for a common seaports policy throughout the EC with particular reference to government attitudes towards investment in port infrastructures and towards the control of cargo flows and throughputs. At the global level a related contribution was made in 1979 to the seminar on cityport industrialization

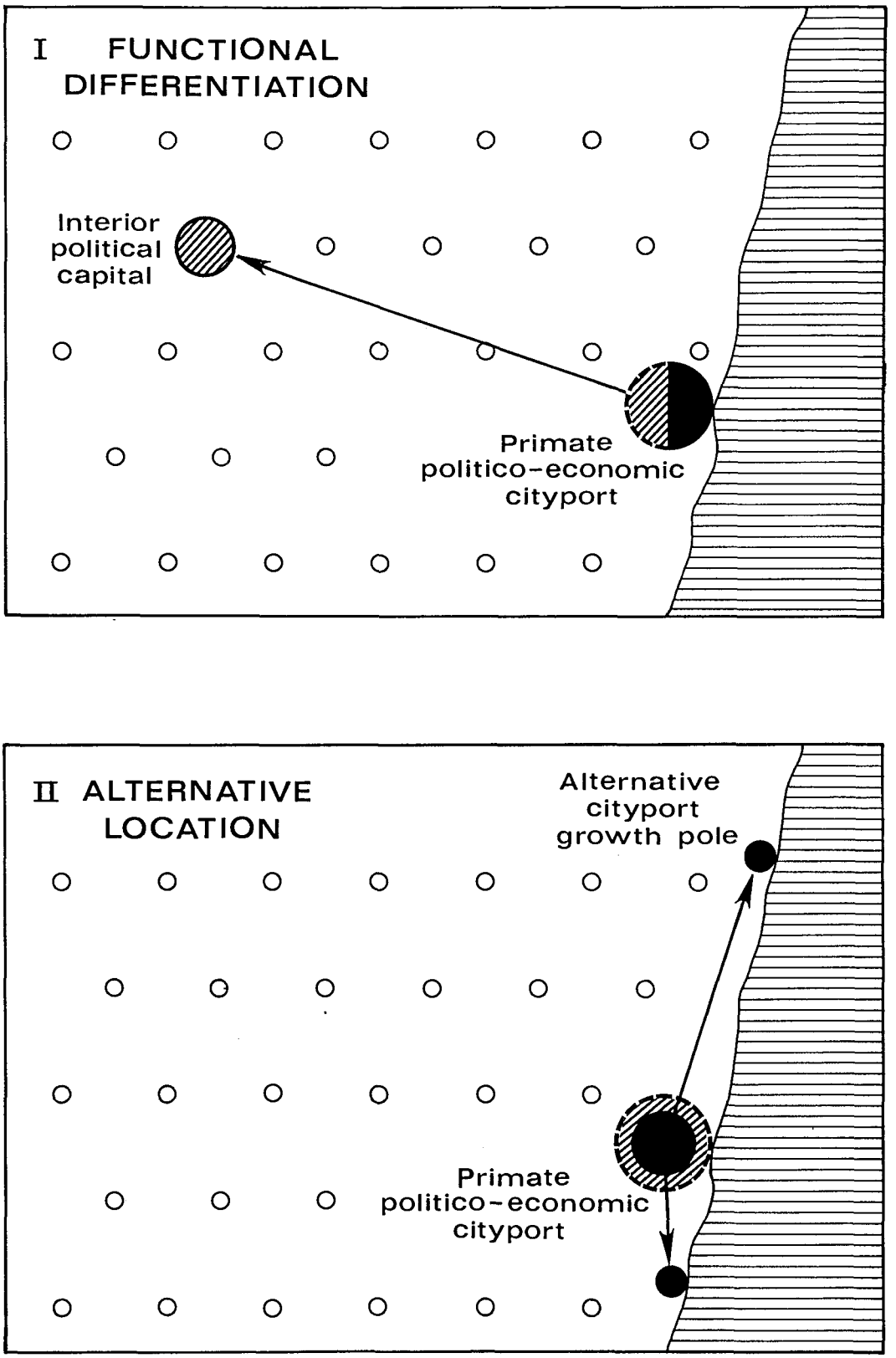


Fig.4 Ports and policies: two alternative outline strategies

organised by the Department by Professor André Vigarié, the doyen of French port geographers, on the problems associated with Maritime Industrial Development Areas. His paper (Vigarié, 1981) surveyed the varied responses in Europe, Japan and the newly-industrialising countries to recent global trends in international bulk transport and towards waterfront locations for major industries such as steelworks and petrochemicals. The themes developed in this paper are relevant to port geography throughout the world, and are appropriately illustrated by other work undertaken by members of the Department in Marseilles-Fos, Rotterdam and other port-industrial complexes in the advanced world, and also by incipient or partially-developed port-industrial projects in Third World locations such as Singapore and Mombasa, Kenya.

Research in progress

Looking back over the past few years it seems clear that the Department is coming towards the end of a period that has been both varied and productive in terms of port research. In the later 1970s the Department extended and consolidated its network of international contacts in universities and throughout the port industry; and benefitted substantially from research support from the SSRC, the Nuffield Foundation and this University among other sources. The SEDEC Project is now completed and the results in course of publication; the cityport industrialization theme has yielded a substantial volume; and the doctoral research programme on port selection met with well-deserved success. All this is now behind us, and in the immediate future we hope

to see the successful completion of another doctoral research programme on ports and trade in the Persian Gulf, on which Miss Gila Sajadi has been working for the past three years. This promises to be an interesting link between the Department's interests in port studies and in the study of the Middle East and other developing areas. Dr. Hoyle has recently completed a new book on seaports and the development process in less-developed countries, with special reference to the experience of Kenya and Tanzania (Hoyle, 1983), and is currently working on another contributed volume on ports and regional development policies in advanced and less-developed countries, in co-operation with Dr. D. Hilling of Bedford College, London.

Conclusion

The evidence presented above shows that Southampton geographers have contributed, and are continuing to contribute, significantly towards the increased understanding and explanation of some of the innumerable subsystems within port geography which are represented in simplified form in Figure 1. The staff and research students of the Department have made recognised contributions at various points within these subsystems, and indeed towards a deeper understanding of the system as a whole.

The balance of account to date suggests that on the credit side the Department has contributed in important ways to the development of theoretical concepts in port geography, to the morphological and

evolutionary analysis of port systems, and to the study of port-city and port-region relationships. The Department is one of a relatively small number of university geography departments where port studies are strongly represented, and one of a very small number keeping up a strong interest in the ports of advanced and less-developed countries. On the debit side, there are two major shortcomings. One is that the Department has not made enough effort to capitalise on the convergent interests and related expertise of its members in this field. The record includes both successes and failures in this context, but we could do much more to foster both bi-lateral and team-based research in this field. This might even bring more closely together the so-called 'physical' and 'human' geographers; and might conceivably serve to integrate the diverse and often piecemeal consultants' reports associated with port projects.

The second shortcoming is also, in a sense, a predominant trend. For too long, like port geographers elsewhere, we have tended to focus our attention on specific ports and port systems, and on port-hinterland relationships, to the obvious neglect of maritime factors and viewpoints and of the wider contexts within which ports are set. In recent years, however, we have tended to move away from the waterfront, away from morphological and functional studies of port areas themselves, towards a behavioural policy-oriented approach in port-related work. On the maritime side this is illustrated by the recent work on the decision-making processes amongst ship operators and port authorities; on the

landward side there is a clear trend towards the re-interpretation of the role of ports in national development planning policies.

In the past the critical interface in port geography was conventionally regarded as the waterfront, the line of division between two kinds of space and two modes of transport. Today the importance of that line has been eroded, in a sense, by the concept of containerised through transport and by roll-on / roll-off systems, but it is still significant. The critical interface today, however, lies less precisely but more firmly amongst those responsible for planning the future inter-relationships between ports, cities, regions and maritime transport systems in a context of rapidly-changing technology and economic recession. To the understanding of this new multifaceted interface and the formulation of relevant policies we hope to continue to make useful contributions.

REFERENCES: Selected publications on ports and and port-related topics by present and past members of the Department of Geography, University of Southampton.

This list is not intended to provide a comprehensive bibliography of every item published by present or past members of the Department on ports and port-related topics - such a list would be extremely long, and almost inevitably incomplete. The objective here is rather to provide a representative list as an indication of the nature of the research that has been attempted, the variety of approaches and personnel involved, and the character of resultant publications. There is an emphasis on relatively recent work and on fairly specific port themes, but also an attempt to indicate various links between port research and other fields of investigation, both at Southampton and elsewhere.

Bird, J.H. (1957), The geography of the port of London (London, Hutchinson).

Bird, J.H. (1963), The major seaports of the United Kingdom (London, Hutchinson).

Bird, J.H. (1967), 'Seaports and the European Economic Community', Geographical Journal 133, 302-327.

Bird, J.H. (1968), Seaport gateways of Australia (London, Oxford University Press).

Bird, J.H. (1969), 'Traffic flows to and from British seaports', Geography 54, 284-302.

Bird, J.H. (1971), Seaports and seaport terminals (London, Hutchinson).

Bird, J.H. (1973), 'Of central places, cities and seaports', Geography 58, 105-118.

Bird, J.H. (1977), 'Ports maritimes en systèmes ouverts de la CEE: deux conséquences', Bulletin de l'Association de Géographes Français 441-2, 63-70.

Bird, J.H. (1980), 'Seaports as a subset of gateways for regions: a research survey', Progress in Human Geography 4, 360-370.

Bird, J.H. (1982a and b), 'Transport decision-makers speak: the Seaport Development in the European Communities Research Project', Maritime Policy and Management 9, 1-22 (Part I) and 83-102 (Part II).

Bird, J.H. (1983), 'Gateways: slow recognition but irresistible rise', Tijdschrift voor Economische en Sociale Geografie (in press).

Bird, J.H., Lochhead, E.N. and Willingale, M.C. (1983), 'Methods of investigating decisions involving spatial effects including content analysis of interviews', Transactions of the Institute of British Geographers, in press.

Bird, J.H. and Pollock, E.E. (1978), 'The future of seaports in the European Communities', Geographical Journal 144, 23-48.

Davies, W.K.D. and Robinson, G.W.S. (1968), 'The nodal structure of the Solent region', Journal of the Town Planning Institute 54, 18-22.

Daysh, G.H.J. (1928), Southampton: points in its development to the end of the eighteenth century (Southampton, Cox and Sharland).

Daysh, G.H.J. (1929), 'The future of the port of Southampton', Scottish Geographical Magazine 45, 211-219.

Hoyle, B.S. (1960), 'The Etang de Berre: recent port expansion and associated industrial development at Marseilles', Tijdschrift voor Economische en Sociale Geografie 53, 57-65.

Hoyle, B.S. (1967), The seaports of East Africa (Nairobi, East African Publishing House).

Hoyle, B.S. (1968), 'East African seaports: an application of the concept of Anyport', Transactions of the Institute of British Geographers 44, 163-183.

Hoyle, B.S. (1972), 'The port function in the urban development of tropical Africa', La croissance urbaine en Afrique noire et à Madagascar (Paris, CNRS), II, 705-718.

Hoyle, B.S. (1978), 'African politics and port expansion at Dar es Salaam', Geographical Review 68, 31-50.

Hoyle, B.S. (1981), 'Cityport industrialization and regional development in less-developed countries: the tropical African experience', in Hoyle and Pinder, Cityport industrialization, 281-303.

Hoyle, B.S. (1983), Seaports and development: the experience of Kenya and Tanzania (New York and London, Gordon and Breach).

Hoyle, B.S. and Hilling, D. (ed.) (1970), Seaports and development in tropical Africa (London, Macmillan).

Hoyle, B.S. and Pinder, D.A. (ed.) (1981a), Cityport industrialization and regional development: spatial analysis and planning strategies (Oxford, Pergamon Press, Urban and Regional Planning Series Vol. 24).

Hoyle, B.S. and Pinder, D.A. (1981b), 'Seaports, cities and transport systems', in Hoyle and Pinder, Cityport industrialization, 1-10.

Hoyle, B.S. and Pinder, D.A. (1982a), 'Seaports and development in advanced economies', tape/slide programme (London, Audio Learning).

Hoyle, B.S. and Pinder, D.A. (1982b), 'Seaports and development in developing countries', tape/slide programme (London, Audio Learning).

Husain, M.S. (1981), 'Influences on development policy in the port of Hamburg', in Hoyle and Pinder, Cityport industrialization, 223-242.

Mason, C.M. and Witherick, M.E. (ed.) (1981), Dimensions of change in a growth area: Southampton since 1960 (Aldershot, Gower).

Pinder, D.A. (1981), 'Community attitude as a limiting factor in port growth: the case of Rotterdam', in Hoyle and Pinder, Cityport industrialization, 181-199.

Pinder, D.A. and Hoyle, B.S. (1981), 'Cityports, technologies and development strategies', in Hoyle and Pinder, Cityport industrialization, 323-338.

Rishbeth, O.H.T. (1931), 'Land utilization', in Southampton: a civic survey (London, Oxford University Press, for the Southampton Civic Society), 30-39.

Tavener, L.E. (1950), 'The port of Southampton', Economic Geography 26, 260-273.

Thompson, I.B. (1975), The Lower Rhone and Marseille (London, Oxford University Press).

Thompson, I.B. and Tuppen, J.N. (1973), 'The social and economic impact of a major regional development scheme: Fos-sur-Mer', Report to the Social Science Research Council, 50 pp.

Tuppen, J.N. (1974), The concept of an axis in the context of the Lower Seine valley (University of Southampton, Department of Geography, unpublished Ph.D. thesis).

Tuppen, J.N. (1975), 'Fos - Europort of the south?', Geography 60, 213-217.

Tuppen, J.N. (1981), 'The role of Dunkerque in the industrial economy of Nord - Pas de Calais', in Hoyle and Pinder, Cityport industrialization, 265-279.

Wagstaff, J.M. (1971), 'The development of Southampton to about 1800 A.D.', Field studies in South Hampshire (ed. M.J. Clark), Southampton Geographical Association, 1-7.

Willingale, M.C. (1981), 'The port-routeing behaviour of short-sea ship operators: theory and practice', Maritime Policy and Management 8, 109-120.

Willingale, M.C. (1982), Port-routeing decision making (University of Southampton, Department of Geography, unpublished Ph.D. thesis).

Witherick, M.E. (1981a), 'Port development, port-city linkages and prospects for maritime industry: a case study of Southampton', in Hoyle and Pinder, Cityport industrialization, 113-131.

Witherick, M.E. (1981b), 'The port and its local multiplier effect', in Mason and Witherick, Dimensions of change, 32-51.

ADDITIONAL REFERENCES CITED

Cottier, J. (1936), 'Le port de Southampton', Annales de Géographie 45 240-255.

Couper, A.D. (1972), The geography of sea transport (London, Hutchinson).

Dickson, K.B. (1965), 'Evolution of seaports in Ghana, 1800-1928', Annals of the Association of American Geographers 55, 98-111.

Ford, P. (ed.) (1931), Southampton: a civic survey (London, Oxford University Press).

Ford, P. (1934), Work and wealth in a modern port: an economic survey of Southampton (London, Allen and Unwin).

Gay, F.J. (1981), 'Urban decision-makers and the development of an industrial port: the example of Le Havre', in Hoyle and Pinder, Cityport industrialization, 201-222.

Hayuth, Y. (1982), 'The port-urban interface: an area in transition', Area 14(3), 219-224.

Hilling, D. (1966), 'Tema - the geography of a new port', Geography 51, 111-125.

Hilling, D. (1969), 'The evolution of the major seaports of West Africa', Geographical Journal 135, 365-378.

Hilling, D. (1970), 'Port development and economic growth - the case of Ghana', in Hoyle and Hilling, Seaports and development in tropical Africa, 127-145.

Hilling, D. (1975), 'Port specialisation and efficiency - the case of Ghana', Maritime Studies and Management 3, 13-20.

Hilling, D. (1977), 'The evolution of a port system - the case of Ghana', Geography 62, 97-105.

Northcliffe, G.B. (1981), 'Industrial change in old port areas: the case of the port of Toronto', Cahiers de Géographie du Québec 25, 237-254.

Ogundana, B. (1971), 'The location factor in changing seaport significance in Nigeria', Nigerian Geographical Journal 14, 71-88.

Slack, B. (1980), 'Technology and seaports in the 1980s', Tijdschrift voor Economische en Sociale Geografie 71, 108-113.

Vallega, A. (1981), Per una geografia del mare (Milan, Murcia).

Verlaque, C. (1975), Géographie des transports maritimes (Paris, Doin).

Verlaque, C. (1981), 'Patterns and levels of port industrialization in the western Mediterranean', in Hoyle and Pinder, Cityport industrialization 69-85.

Vigarié, A. (1979), Ports de commerce et vie littorale (Paris, Hachette).

Vigarié, A. (1981), 'Maritime industrial development areas: structural evolution and implications for regional development', in Hoyle and Pinder, Cityport industrialization, 23-36.

Wentworth Shields, F.E. (1931), 'Port and dock development', in Southampton, a civic survey (ed. P. Ford) (London, Oxford University Press for the Southampton Civic Society), 40-44.

Wiese, B. (1981a), Seaports and port cities of southern Africa (Weisbaden, Franz Steiner Verlag GMBH: Kölner Geographische Arbeiten 11).

Wiese, B. (1981b), 'New ports as nodes for industrial and urban development: the cases of Richards Bay and Saldanha in South Africa', Geojournal, Supplementary Issue 2, 51-58.

Wolkowitsch, M. (1979), 'Les rapports entre espaces portuaires et espaces urbains: 1'exemple de Marseille', Second Colloque Franco-Japonais de Géographie: Villes et Ports (Paris, CNRS, No. 587), 163-173).

Wolkowitsch, M. (1981), 'Port extension as a factor in urban development: the case of Marseilles', in Hoyle and Pinder, Cityport industrialization, 87-101.

University of Southampton Department of Geography

DISCUSSION PAPER SERIES

1	The elimination of under-estimation in nearest neighbour analysis	D A Pinder	1978
2	Percentages, ratios and inbuilt relationships in geographical research: an overview and bibliography	K Jones	1978
3	An evaluation of bed material sampling techniques for use in mixed sand and gravel-bed streams	B Gomez	1979
4	Industrial promotion by local and regional authorities: the effectiveness of advertising material	C M Mason	1979
5	Planning for remote rural areas: the Swiss experience	D Grafton	1980
6	A consideration of the use of newspapers as a source of data for geographical research	R Williams	1980
7	Foreign-owned plants and regional policy in the United Kingdom: some evidence from South Hampshire	C M Mason	1980
8	Territorial justice and the allocation of suburban leisure services: a case study of Havant, Hampshire	G M Moon	1981
9	The spatial variation of rainfall and its importance in urban hydrology: a case study of three small urban catchments	J M Buttle	1981
10	A general theory of development	E Biagini	1981
11	Channelization in England and Wales	A Brookes	1982
12	The management of industrial change: structural policies in West Germany	M S Husain	1982
13	New manufacturing firms in South Hampshire: survey results	C M Mason	1982
14	On using social geography concepts and approaches in the study of industrial location	B Chalkley & M Perry	1982
15	The Southampton area in the 1980s: recession, stagnation or growth?	C M Mason & M E Witherick	1983
16	Inequality in pre-school provision: a geographical perspective	S P Pinch	1983
17	River channel roughness	D Watson	1983

Discussion Papers 1 to 12 inclusive are priced at £0.50 and 13 to 17 at £0.75. Copies can be obtained from:

The Librarian,
Geography Department,
The University,
Southampton, SO9 5NH.

Copies of Dimensions of Change in a Growth Area: Southampton since 1960, edited by C M Mason and M E Witherick (1981), are also available at £5.00 (or £6.50 including postage and packing).