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Alexandria 2005: Planning for the future of an historic city

Gerald B. Dix

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Introduction

This paper describes some of the principal features of the Comprehensive Master Plan for Alexandria¹ as presented to the Governor in 1984 and its subsequent elaboration. The work was undertaken in Alexandria principally by the Governorate and the University of Alexandria with the assistance of staff from the University of Liverpool working under the auspices of the Overseas Development Administration of the British Government. Some of the material in this paper has appeared in a different form elsewhere and the author, who has been associated with the planning project from the outset, is grateful for permission to revise material from earlier publications.

The evolution of Alexandria

If a man make a pilgrimage round Alexandria in the morning, God will make for him a golden crown set with pearls, perfumed with musk and camphor and shining from the East to the West.

Ibu Dukmak

Early development

Alexandria, second city and principal port of Egypt, was founded in 331 BC when Alexander the Great decided to build, as the capital for his Egyptian kingdom, a new city that was to perpetuate all that was best in Hellenism. It was to be a metropolis for a greater Greece that would include the whole of the inhabited world. Although it was situated close to the existing small settlement of Rhakotis,² early development was slow and Alexander did not live long enough ever to see the new city that is now the second largest in Egypt, with a cosmopolitan population of over three million people.

"There is an island in the singing sea, which they call Pharos, lying off Egypt" wrote Homer, "It has a harbor with a good anchorage."³ In the early development of the city, Dinocrates, Alexander's architect, built a break-water or mole, the Heptastadium, linking that island, where stood the lighthouse that was one of the seven wonders

of the world, with the mainland, thereby forming the basis of the present eastern and western harbors. The original city was based on a grid iron plan, and although the two principal streets can be identified to this day it is virtually impossible to discover the locations of individual buildings, so great has been the destruction of the city during the subsequent millennia (fig. 1A).

By the reign of Ptolemy II (285-246 BC) Alexandria was admired amongst cities of the world and under Roman rule commerce developed significantly,⁴ the city becoming second only in importance to Rome by the 4th century AD.⁵ When the Arabs captured Alexandria in the seventh century AD their commander was able to report that he had taken "a city, of which I can only say that it contains 4,000 palaces, 4,000 baths, 400 theaters, 12,000 greengrocers and 40,000 Jews."⁶ Even allowing for the general's enthusiastic exaggeration in the wake of his success it is evident that the water supplies, underground from the Nile, still functioned in a city blessed with an agriculturally productive hinterland and an active business community (fig. 1B). When the city was walled towards the end of the ninth century the street alignment was still much influenced by the earlier grid plan although it was not closely built up (fig. 1C). However, for more than a thousand years there was little progress and Alexandria's pre-eminent position amongst Mediterranean cities was lost. The Canopic mouth of the Nile silted up and Lake Maryut, no longer fed by Nile floods, ceased to be a navigational and transport asset.

Although the population continued to decline for more than two hundred years under Turkish rule, two forts were built, one on the island of Pharos and the other on the site of the Ptolemaic library that had been one of the glories of Alexandria.⁷ At the time of the first modern survey of the city, by an engineer in Napoleon's army, Alexandria was a small mean port, huddled on the sandy isthmus separating the eastern from the western harbor,⁸ its European community settled on the shore of the eastern harbor (fig. 1D). Inland was the site of the walled earlier Alexandria, by then reduced to the status of a vegetable garden and, but for two small villages, deserted by all its Arab population. This period marks the nadir of Alexandria's two and a half thousand year history, for growth which slowly began again early in the nineteenth century led within a hundred years to the consolidation of the cosmopolitan commercial center that is the heart of the metropolis we know today.

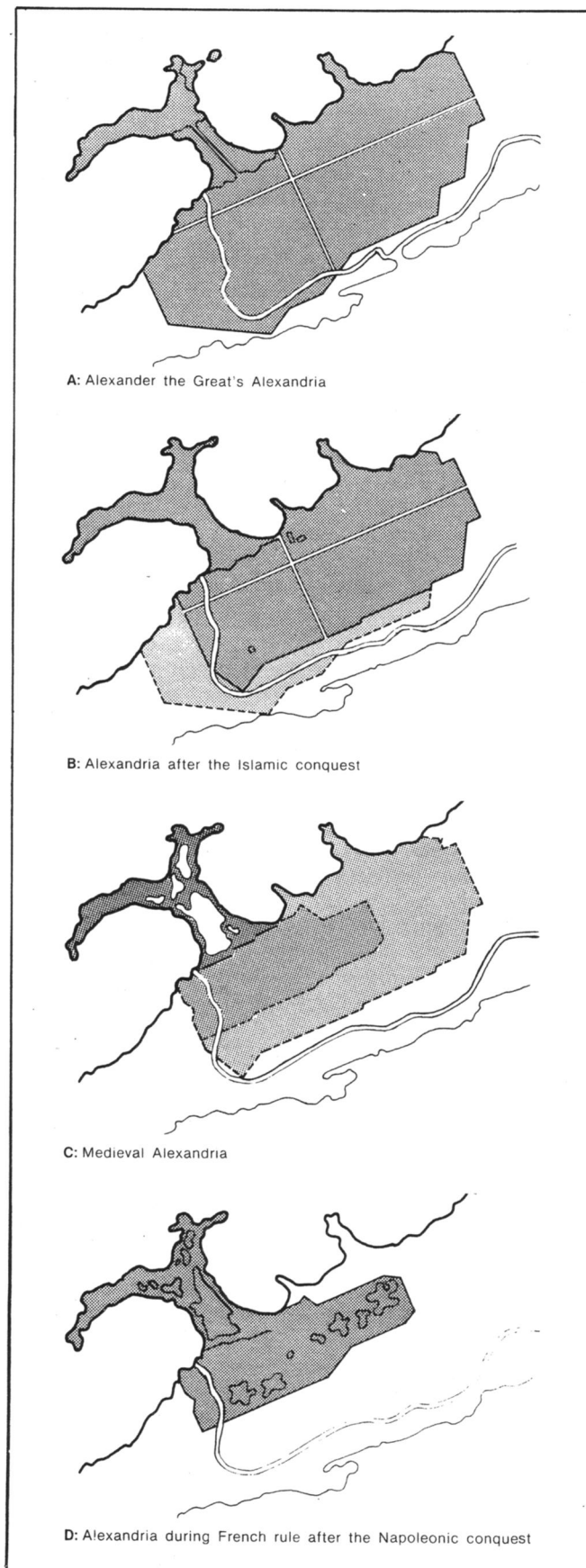


Fig. 1: Alexandria in history.

The Recent Past

By the middle of the last century the European quarter had expanded, Mohammed Ali had built Ras El Tin palace and the Mahmudiya Canal had been dredged and again linked the Nile and the western harbor. The construction of early factories in the city and the building of Egypt's first railway marked the start of Egypt's industrial revolution and with the consolidation of the western harbor and the naval base the city developed rapidly (fig. 2). There was a new railway station and tramways stimulated suburban growth, principally eastwards, much of it with villas used only in the summer by affluent Cairenes.

There are now more than one and a half million visitors each summer, not by any means each very wealthy but all contributing to the city's commercial life and creating important planning problems. Despite their impact, throughout its history the prosperity of Alexandria has been primarily related to its port. It is on the port and port dependent activities and industries that the city still largely depends for its affluence and its influence.

Seventy years ago the novelist E.M. Forster wrote a guide to Alexandria that reflected the magic and antiquity of the city as well as its complexity in a work that combined lucidity with literary merit.⁹ So great was the rate of development that revisiting it after an interval of a few years he lost his way as he came out of the railway station. What, one wonders, would he, let alone Alexander or Dinocrates, make of present day Alexandria which has more than trebled in population from less than one million thirty years ago to more than three million today and is expected to grow by a further two million in the next two decades? As Forster remarked, ancient though she is, Alexandria is still alive and alters whilst one tries to sum her up.¹⁰

As a result of its trading connections over centuries, Alexandria developed a unique cosmopolitan society epitomizing much of the best of Middle Eastern and European civilizations, seemingly ever able to absorb the shocks of war and invasion, to retain what was good and reject the dross from those who came to invade or to trade. From being an international, in some respects even un-Egyptian community, with its shampooed streets and manicured lawns, Alexandria has become the second manufacturing center of Egypt, with 38 percent of the national industrial activity and by far the largest port, handling almost 31 million tons of freight in 1983.

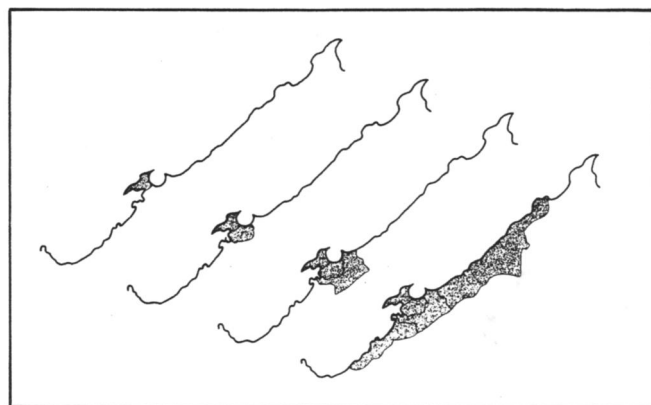


Fig. 2: Alexandria — Characteristic stages of growth during the last 150 years.

Construction of houses and flats has for some years been insufficient to meet needs and, combined with a shortage of building land and pressure to convert central area buildings for commercial purposes, this has resulted in spiralling land prices. Rent control measures, introduced without a proper understanding of the long-term consequences, have accorded short-term benefits to rich and poor alike to the detriment of the building stock. Without the possibility of passing on the cost of repairs in the form of increased rents, there is neither incentive nor possibility for property owners properly to maintain buildings. As a consequence older rent controlled buildings are almost invariably ill-maintained and, because the rents are so much lower than in new construction, often seriously overcrowded. (figs. 3 to 8)

Although it remains a gracious city of considerable character to which those who know it are quite devoted, to an outsider the curse of contemporary Alexandria appears to have been, at least until very lately, a lack of practical concern for building maintenance or environmental protection, with increasing pollution of land, sea and air and serious beach erosion. The recent completion of a Festival Garden on the site of a former municipal refuse tip and UN supported proposals recognizing properly treated sewage effluent as a resource for land development rather than, as in the past, a pollutant of the sea, may be indicative of a change of heart, first heralded in the decision in 1979 to prepare a master plan looking to the end of the century and beyond.

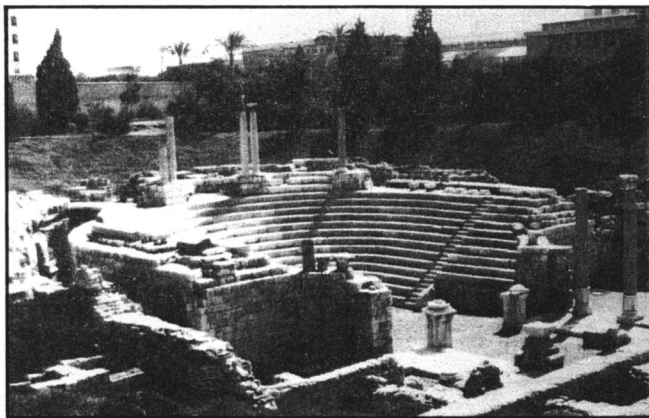


Fig. 3: Alexandria — Roman theater.



Fig. 4: Alexandria — In the town center.



Fig. 5: Alexandria — A fertilizer factory at Aboukir.



Fig. 6: Alexandria — Old housing in the inner city with illegal extensions onto the footpaths.



Fig. 7: Alexandria — Government economic housing.

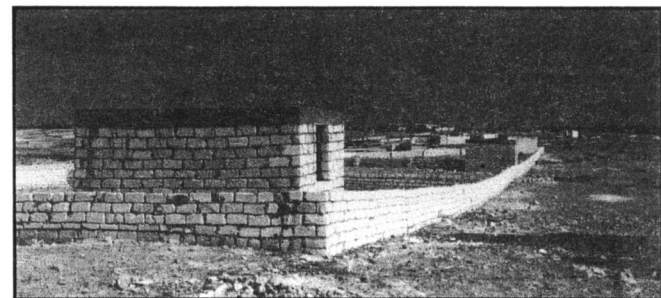


Fig. 8: Alexandria — Housing on the westward expansion of the city.

Planning for the future

Making the Master Plan

The (then) Governor of Alexandria, Dr Fouad Helmi, was an Alexandrian and an architect and planner of wide experience. He was naturally therefore not only devoted to the city but also well aware of the problems involved in the planning of a major, congested metropolitan area where there are shortages of statistics, staff and time and where the only certain thing is a rate of growth that cannot be accommodated by conventional means. He accepted that, whilst these circumstances posed great difficulties, they also provided wonderful opportunities to develop an urban form that could both respond to and express the needs of city life as we approach the twenty-first century (fig. 9).

Organization: To meet Alexandria's many and often conflicting requirements and to cater for inevitable future growth required that careful but prompt action be given simultaneously to the process of planning, to the preparation of a plan and to the training of planning staff. The existing planning and housing departments were already under considerable pressure dealing with day-to-day developments. In these circumstances the Governor decided that the best course of action would be to establish the "Comprehensive Master Plan Project" separately from existing governorate planning and development agencies so that he might be able to receive disinterested — but not uninterested — ideas and proposals from an organization that would be able to stand back from day-to-day pressures and prejudices and look at a whole range of possibilities for the future and to make recommendations from time to time for consideration by national

and governorate political leaders. He also thought it important that no major development should be delayed by the plan preparation, but that decisions should be taken as circumstances required during the time the plan was being prepared.

"The Master Plan" — A comprehensive planning concept: The term "Master Plan" was used in the title of the project not to suggest that the outcome would be proposals that would, or could, endure in perpetuity in all their detail, but rather to give the principles of the plan a stamp of authority and to include a degree of "definiteness" that would make planning real to politicians and public alike, with something positive to discuss, much as it had with the plans for London, forty years earlier. This is very important where comprehensive planning is either little known or is rarely undertaken and accords with the views of those who consider that too much policy and too few specific proposals may be inappropriate in a rapidly developing country.¹¹ It was considered essential to demonstrate what the consequences of the recommended policies would be, but it was clearly appreciated that, because there were so many unknown or partially known factors, changes would be inevitable. These could however readily be made from time to time with minimum effort and in accordance with the general principles, or philosophy, of the plan, the better to meet changing requirements, many of which are unpredictable. This view is spelled out in the final item of the Master Plan strategy which emphasizes that planning is a continuing process and that plans should be monitored, reviewed and brought up to date, taking into account the changing availability of human, financial and natural resources.

Because town planning was — and in some circles, alas, still is — frequently equated with architecture writ

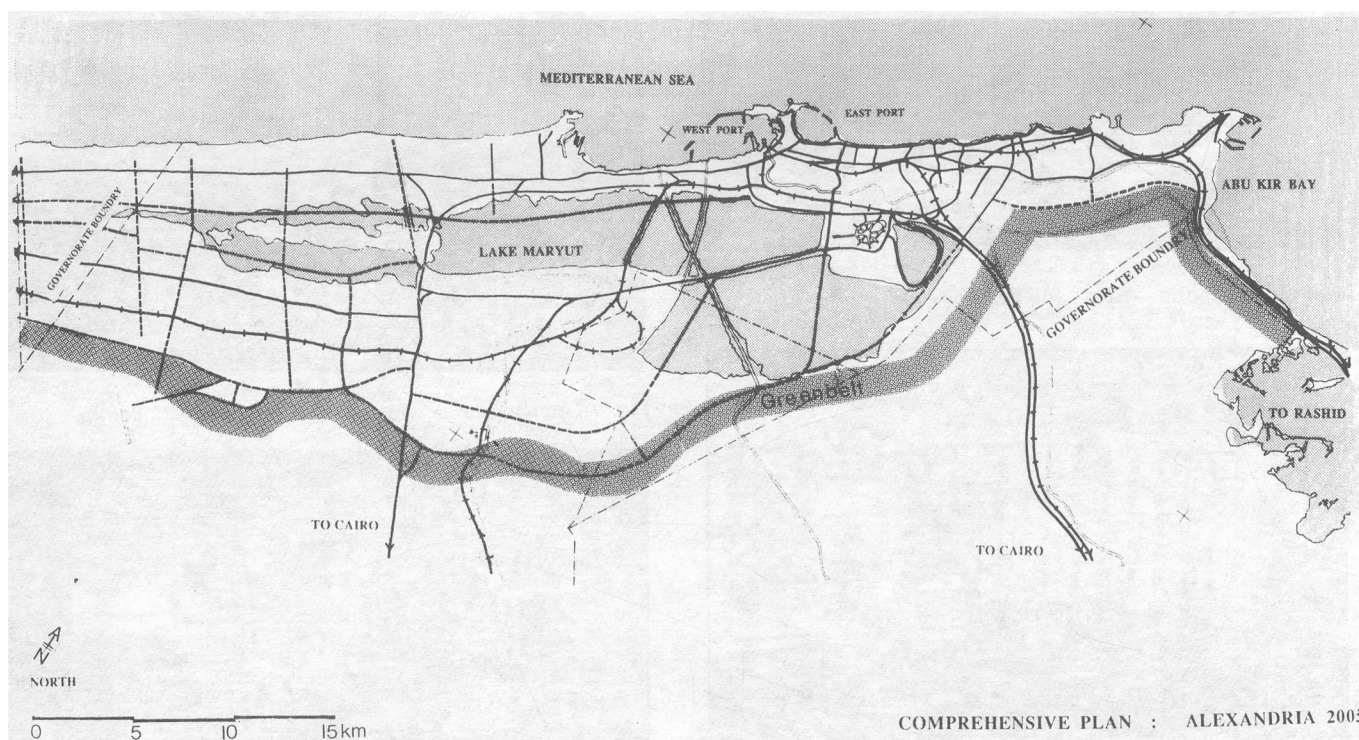


Fig. 9: Alexandria — The Master Plan.

large, with street widening and with civic design in its narrowest sense, it was felt important to emphasize that these considerations represented but a small fraction of the range of concerns of the plan which properly comprehended within its scope matters of housing and health, economic activity and communications and other topics having a bearing on the world about us: hence the use of the term "Comprehensive."

The method of working: The method of working was simple and flexible and could be readily adopted elsewhere. A small team largely of part-time professional staff from a range of disciplines was established to do the substantive work in which they were assisted by a full-time technical, administrative and support staff. Most of the part-time professionals came from various departments in the University of Alexandria and specialist advice and routine consultation were provided at the request of the Project Director by members of a number of departments at the University of Liverpool.

Committees were established to consider requirements in all major policy areas, such as traffic and transport, health, agriculture, industry and housing, each committee including representatives from each of the different fields concerned and chaired by a leader in the subject, to advise on future policy and requirements. Not surprisingly there were clashes of interests from time to time but these were resolved by amicable compromise. Technically and professionally acceptable proposals resulted and on balance this approach seems to have worked well, and probably better than would a conventional consultancy. Proposals from the various subject groups were discussed at regular meetings of the main project committee which comprised the chairmen of each of the specialist committees and the senior planning staff under the chairmanship of the Project Director who had regular consultations with the Governor on aspects of policy. From time to time, in accordance with the policy already noted, matters requiring urgent consideration where delay would be unacceptable were referred by the Governor to the committee, with the understanding that the consequences of its decisions would be built in to the plan, like fixed points in the landscape.

Policies and strategies

After much discussion the Project Committee defined seven key policy and development issues to be addressed in the Master Plan. These were:

- the growth in population;
- the deterioration of housing conditions;
- increasing land values and building costs;
- the protection of agricultural land;
- the management of industrial expansion;
- the preservation of the historical heritage; and
- the control of environmental pollution and the erosion of beaches.

In amplification of these policy issues, the Master Plan Strategy in turn defines seventeen major areas in which action and implementation will follow in due course. These not only include such obviously pressing matters as the provision of housing and new communities for the growing population, with consequent increases in social, commercial and industrial activity and improvements in communications, but also draw attention to some urgently

needed protective measures, raising important questions of priorities which are particularly difficult to resolve where resources are limited and demand hard to estimate.

The central area: The central area of Alexandria is, on the whole, overdeveloped as far as ground coverage is concerned, with high density apartment buildings intermingled with shops and offices and, in the poorer quarter, with small industries and workshops. Streets are narrow and parking provision minimal. Open space is at a premium. The plan proposes the revitalization of this area, with the widening of a number of streets and the pedestrianization of others, the provision of adequate car parking space¹² and an efficient public transport system. Plot ratios and maximum building heights are recommended and there will be increased open space and planting. There will undoubtedly be much rebuilding in the coming decade without, one hopes, the loss of too much of that character, form and scale that combine to make Alexandria attractive. However it will require a more effective development control system than is currently available to prevent any repetition of the present solitary but substantial break which spoils the otherwise consistent roofline on the Corniche, one of the city's best known features.

Almost inevitably, when foundations are dug for new and urgently needed developments, sites of archaeological interest related to Alexandria's long history are discovered. To what extent should today's need, which might perhaps be met in another location but at greater cost, be subservient to the preservation of antiquities, which once destroyed are lost forever? And how much delay in building can be accepted whilst relics are evaluated? The plan indicates buildings of all ages from Alexander to Auguste Perret and after, which it is recommended should be retained as being representative of Alexandria's architectural and cultural heritage. The number is small in relation to the size of the city and represents a realistic and, one hopes, workable compromise that should not inhibit new developments too much. A series of city walks has been devised linking key buildings and areas of historic interest on routes that can easily be traversed by those anxious to form an impression of various eras and areas of the city's growth.

Transport for passengers and freight, whether public or private, is a major problem in almost every big city, old or new, developed or developing. In Alexandria there are particular problems arising from the function and form of the city. Almost all of the thirty million tons of freight that passes through the port each year has to cross the urban area by road or rail and whilst the railway lines are already adequate for port purposes the plan proposes a major new elevated road link between the docks entrance and the desert road leading to Cairo and Upper Egypt. Almost 90 percent of freight to and from the port is carried by lorries through some of the city's main roads. This master plan road proposal will reduce this nuisance to minimum practical proportions. Those who live in the earlier developed eastern suburb are also well served by rail for, as in London, early twentieth century expansion development followed the railway and the tramway. Important lines extend far to the east but less so to the west and there is an inconvenient break in the city center where the best remedy appears to lie in the construction of a short stretch underground.

Urban expansion: The growth of Alexandria along the road and rail routes to Cairo is inhibited by Lake Maryut which runs but a few kilometers inland for a considerable distance parallel to the coast, cramping development in elongated form yet at the same time providing wonderful opportunities for housing where the lake's delicate pale expanse might have so beautified the southern quarters.¹³ Instead it has become in parts an open sewer, in others the dumping ground for industrial effluent. The plan proposes the restoration of this asset as a key element in the westward expansion that forms the major growth element of the future metropolis. At an early planning stage consideration was given to trying to reduce traffic by developing Alexandria as a twin center city with a second nucleus some kilometers to the west of the present one but the idea was abandoned as unrealistic at the time. However, using the new airport, some forty kilometers from the city center as a catalyst in association with the industries and other facilities in New Ameriya city — now only the shadow of a new town — this may become a possibility, further easing the congestion of cross town traffic.

Alexandria's early suburban growth took place in the east towards the Nile Delta, where public transport was available but where building encroached and now still further encroaches on good agricultural land (fig.10). Whilst accepting that there will be some infilling, the Master Plan proposes bold policies to correct imbalances resulting from earlier unplanned development and provides for the greater part of the future expansion to be on desert land to the west of Alexandria rather than towards the agricultural east and south-east (fig.11). The form and location of the planned development is related to economic, social and physical circumstances. It is not only important to avoid further encroachment on agricultural land for building purposes but where possible to increase the amount of land under cultivation. It is also important to make the best provision for the least cost and to relate building programs to the financial capacity of government and the productive capacity of the building industry, in an urban structure capable of being varied to meet sudden and unpredictable changes of circumstances. Westward expansion of the existing city, in a grid layout that is sufficiently flexible to accommodate wide variations in density of residential development, compatible with plans for the new city of Ameriya and broadly with the recommendations of the Government's North Coast Development Plan, will provide the most economical solution, with low cost housing and increasing opportunities for agricultural and green belt or shelter belt planting. New communities will have ready access to the road approach from Cairo to the coast and to both the northern and southern shores of Lake Maryut, which, free of pollution, will become once more, an asset to Alexandria.

In the absence of adequate controls over development and in view of ever increasing pressures for housing in this western area, a pre-emptive planning program is proposed which will lay down all principal road lines, thus demarcating areas within which people newly arriving in Alexandria can build their own dwellings. Whilst these may start as little more than shacks, evidence from elsewhere indicates that, given security of tenure, self-interest will soon ensure a steady rate of home im-

provement.

When construction is the responsibility of the occupants, perhaps but not necessarily using local semi-skilled labor, it is important for safety's sake that there should be a height limit and the site area must be sufficient to allow a householder space for enough accommodation without overcrowding. The building form/density relationship is thus important but in predominantly desert areas the land requirement is a matter of less immediate concern than would be the case on agricultural land. Elsewhere in the city there will be other major new housing developments of a more conventional character serving a variety of population groups, but catering especially for the poor who are rehoused from slum property.

It is expected that, of the present population of about 3.2 million, as many as 25 percent will need rehousing in the next twenty years and that over that period there will be a further 2 million people in need of shelter. At an occupancy rate of 5 persons per dwelling, total housing demand is thus likely to be of the order of 560,000 units, or 28,000 units per year. Allowing for extensive construction by conventional means at, say, 6,000 completions annually (which is likely to be more than the availability of suitable sites), there will be a further requirement of 22,000 units every year. Schools, clinics and other social requirements and essential infrastruc-

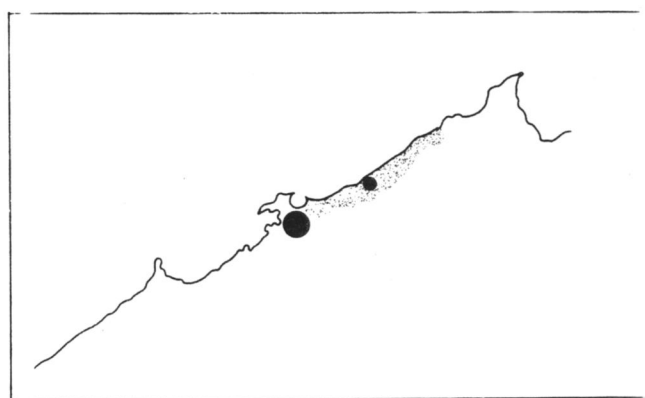


Fig. 10: Alexandria — Growth in the 19th and early 20th century.

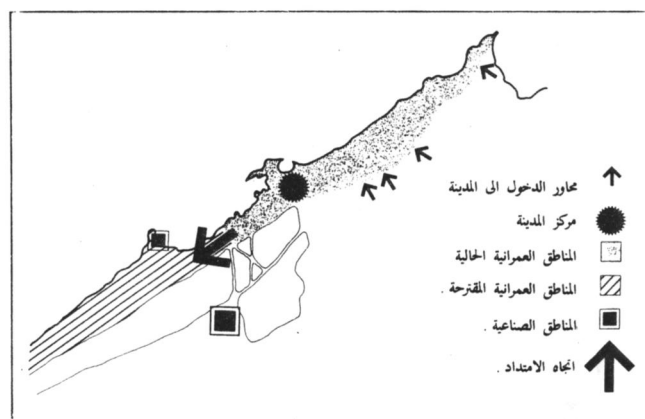


Fig. 11: Alexandria — Structure and land use conditions in 1983. (Source: Alexandria 2005 Comprehensive Plan, Final Report, January 1984 — Sketch by M. Montasser).

ture must necessarily be made by government and must enjoy priority in the allocation of its limited resources. It is important, therefore, that as much as possible of the direct housing cost should be met by those going to live in the area and that those people should benefit from the investment of their own resources and effort. It is also important that incremental housing improvement and infrastructural enhancement should always be possible, facilitating the matching of resources and demand.

The essential requirements may be summarized as an orderly layout with provision for water and drainage, security of tenure, the possibility of gradual house improvement, and affordability assured by there being some local employment. The easiest way of ensuring an orderly layout would be for government to provide services and roads, on a simple grid plan with minimum controls. This would make it possible for a positive form of development control to be operated within the limited financial and staffing resources of a planning department that is as prepared to encourage appropriate development as, properly, to discourage that which is unsuitable. Tenure will be an attraction to investment in development and to the creation of local employment opportunities which in turn will encourage the growth of stable communities.

Housing policy and program

The requirements: In the evolution housing program for Alexandria it was recognized that houses must fulfil six main prerequisites. They must be in the right place in the right quantity at the right time; they must be of the right size and form and of the right construction; perhaps most importantly they must be available at the right price.

Consideration of these requirements is complicated by the fact that it is hard, if not impossible, to define in any precise manner what is right in any respect at any time and it is the overall balance that determines the success or failure of housing policy in national development. Policy or design determinants which individually seem simple but are then of only limited value become infinitely more complex as a group, but are then correspondingly more valuable.

- *The place* for residential development — the right place — may seem the most readily resolved consideration, but experience shows that this is seldom the case. It has been amply demonstrated that to move a worker, his family and his household — which may not be the same thing — away from their social contacts and to isolate them from participation in the informal economy is often more damaging than is the separation from the principal wage earner's formal employment. Accessibility to work and a compatible society is important. Cheap transport cannot outweigh the social and economic costs that separation otherwise imposes. It has been noted that all squatter (and much site and service) building soon develops its own economy, formal and informal — and it would be beneficial for this attribute to be encouraged in more highly organized estate development. Incentives, in the form of serviced sites, will be provided in association with housing layout to induce industry to move, or new industry to establish, in association with the larger of the new neighborhoods, income derived from the servicing of the industrial sites being used to sub-

sidize infrastructure for the residential layouts.

The right place for housing means more than convenience in relation to industry and other employment. A site must be suitable for the proposed form and density of development, for any provision there may be for expansion of dwellings on their sites, in relation to any farm or garden cultivation that may be practicable, and for the provision of infrastructure. Where urban expansion is planned on the desert fringe, as it is in Alexandria, there must be room for at least sufficient planting to avoid excessive wind-borne sand penetration of residential areas.

- *The right time:* Over-optimistic estimates of house production in terms of time and cost have been upset in many plans by harsh reality with a consequent shortfall of completed dwellings, especially in the higher density urban areas. The direct result is more overcrowding and increasing illegal squatter development, leading to the formation of new social and economic groupings whose members will suffer when, or if, permanent housing later becomes available. Missing the "right time" for a family, or a community, to be accommodated can be socially and economically harmful to that family or community, as well as to the wider population of the town or district.

- *House form* is a reflection not simply of the wealth or poverty of a household but more importantly also of the social and religious traditions of society, where beneficial changes evolve rather than happen suddenly. It reflects and affects how people live and whilst changes may be made to accommodate new materials when it is convenient to use them, any sudden and enforced change — perhaps from the introduction into one country of designs produced for another that is climatically and socially quite alien — is likely to prove physically unsatisfactory if not actually socially divisive. In housing there is much to be said for what is tried and familiar, that can be repaired or modified when it goes wrong or ceases to meet requirements, without needing expensive skilled help; in short, for evolution in building methods. All this, of course, influences house form and layout, density and the cost of construction, maintenance and infrastructure. To the urban poor, whose needs are the most difficult for us to satisfy, the most important consideration is cost.

- *Standards:* The prescribing of minimum housing standards is widely accepted in the developing world, but often, alas, without adequate consideration of all the consequences. The experience of fixing standards has been mixed for they are frequently either ignored or they result in dwellings that those for whom they are intended cannot afford.

The ignoring of standards brings all building and planning regulations into disrepute. Rather than encouraging this situation it would be well to consider what results housing standards and other controls are intended to achieve and to set them in order of priority. When we do this we find that there are two main kinds of standards or controls:

- those related to health and inhibiting the spread of disease; and,
- those related to safety within and amongst buildings.

The former include measures to ensure an adequate supply of potable water and reasonable sewerage and drainage,

and sometimes to avoid overcrowding. The latter include elementary structural standards and the spacing apart of dwellings or groups of dwellings so that they do not fall down and so that fire cannot spread too readily from one to another. But as standards impose costs, they should be no higher than is essential in any particular circumstances, so that too many resources are not tied up too early. Gradual improvement is always possible. A housing or planning authority must assess and, from time to time, re-assess its priorities in this regard. The best long-term approach to improving the standard of housing accommodation and construction may lie in early investment in other wealth generating sectors of the economy so that people can afford to improve their accommodation and in guiding, but not controlling, the methods of improvement. This is being advocated in relation to Alexandria's massive western extension.

- *Investment:* What a government can afford to spend on housing is related to the size of the problem in relation to other competing demands on its resources and what is available for this purpose may be primarily dependent on non-housing investment. What an individual or a household can reasonably afford to spend on accommodation is related to earning capacity and may be derived from both the formal and informal economies. Because of their unreliability, housing authorities and banks are often reluctant to include consideration of informal sector incomes in assessing rent paying ability. Equally, to avoid possible taxation, this income is seldom properly reported. The result is that in terms of a formal rent or loan agreement, repayment capacity is underassessed. Equally, there are many occasions when only the income of the principal householder is taken into account, whereas in a household of, say, seven people there may well be three or more contributing from the formal as well as the informal economy. Income from sub-letting is also generally ignored as being too uncertain. If loans are to be made with the responsible caution that one has a right to expect of a bank, all this is no doubt a correct and proper procedure, but it should not be allowed to inhibit low-cost development which uses all resources, formal and informal. What is now required is a means whereby households individually or in cooperatives can invest their own money and labor in development as time and opportunity allows. A housing program that drew its financial support from both formal and informal economies would have greater resources at its disposal than either separately. One that related loans to community groups or societies might be even stronger, with collective resources for repayment insuring against the possible failure of a few individuals.

- *Costs:* It is important that all costs be taken into account. Housing programs frequently overshoot their targets because of inadequate financial consideration of items included in the development almost as a matter of routine, without proper consideration of affordability or possibilities of gradual improvement or the demands of proper maintenance. But in housing for the really poor, the target figure for affordable housing is very low. Whilst all costs must be considered, the tendency to say "it cannot be done" must be avoided: the people are there and they must be provided with shelter. Some unavoidable costs might be reduced by cross subsidy — for example by land sales for industrial development, when nearby

building has increased the value of the land. The balance between affordability and standards becomes a vital consideration.

- *Training:* In drawing up proposals for a housing policy and program for Alexandria, it was important to consider the resources of and demand on the planning and housing departments of the Governorate whose limitations in terms of staff and money might otherwise be controlling factors in what could be done. There are many calls on a government for services that cannot properly be provided by individuals, cooperatives or business enterprises, but might help to create the wealth, however thinly distributed, that would enable those groups to contribute significantly in the provision of housing. In these circumstances, money spent on training community leaders or advisers in what might conveniently be described as "do-it-yourself" techniques might be well spent, helping households to help themselves.

- *Subsidies:* When dwellings are built beyond the rent paying ability of the target population, the result is an ever increasing burden to government, whose cash flow is restricted. Demands for subsidies which governments cannot afford should be resisted and programs planned so that the probability of continuing rent subsidies does not arise. Too often in subsidized housing maintenance becomes an additional and ever increasing charge and is neglected. The result is an appreciating debt and a depreciating asset. The now almost traditional approach of handing the property to the occupants after twenty years or so merely passes the buck to those even less able to afford proper maintenance than can a government agency.

When it is impossible to enumerate with precision anything approaching a total income by household, one may conclude that the best course is for the householders themselves to determine the limits of affordability. Inevitably there will be problems about the sensitivity and reliability of estimates and information, but overall a realistic result will ensue as it does in relation to upgrading schemes, where improvements are made when households have the money, time, materials and labor available.

- *Merits of informal and formal housing:* It has been argued that transitional settlements perform six primary functions. In the first instance they provide a range of improvable types of housing at affordable rents, but they also act as reception centers for those newly arrived in the area, provide a wide variety of unskilled and semi-skilled employment and thus an introduction to urban life; they frequently supply shelter accessible to whatever employment there may be in the formal economy; they provide essential social security and help in times of particular hardship and, finally, they encourage house improvement and small-scale entrepreneurship amongst the householders.

It is the aim of the housing study that forms an extension of the Master Plan to combine the merits found in most informal housing with those of the formal sector, noting the personal contribution that can be made by even the poorest members of the community, directly relieving government of many of what would otherwise be its obligations and making possible the redirection of government expenditure towards aspects otherwise impossible to achieve.

- *Modification and maintenance:* Experience in many

countries has shown that large-scale mass housing by government frequently results in insufficient dwellings being completed too late at too great a cost. Tenants have little commitment to the maintenance of rented property and little possibility to carry out modifications to suit changing requirements. This unfortunate circumstance is also found in some core housing, for example at 10th Ramadan City, near Cairo, where the construction is so substantial as to restrict the possibilities for modification and expansion of the dwellings by the occupants.

Demonstration housing projects: In the amplification of the housing proposals in the Alexandria Comprehensive Master Plan it is noted that demonstration housing projects must fulfil a number of primary and secondary criteria.

- Primary criteria are:
 - Schemes must have more than local applicability, for an idiosyncratic layout however well suited to the needs of a particular site or set of circumstances is unlikely to be of more than local interest.
 - Every project must be solution-oriented and related to existing rather than idealized circumstances.
 - Each project must demonstrate a comprehensive approach to housing for there is little point in establishing a model or a demonstration of housing practices with which everyone is familiar.
 - A project must be clearly related to the community. A housing project is but an element in the settlement and environment of which it forms a part.
 - Every project must be viable, providing housing that even the poorest can afford and which will at the earliest stage meet reasonable needs for shelter whilst allowing a family some choice in the way it disposes of a minimal income.
- Secondary criteria include:
 - Demonstrations of the use of local skills and resources;
 - Minimizing the use of expensive and imported materials;
 - Community leadership in building and construction;
 - Minimizing the demand on expensive technical staff;
 - The potential for the development of a local formal and informal economy to help initiate consolidation and growth; and,
 - The recycling of resources whenever this is possible.

Pre-emptive control of development: In order to attract people to the idea of living on what in the past have been regarded as inhospitable desert lands west of Alexandria in preference to the cultivated delta lands to the east of the city, some incentives must be provided. This is all the more important in view of the inadequacy of development control regulations and the shortage of staff to operate them. A pre-emptive control of development is proposed, under which those building their own dwellings in accordance with a prescribed layout would be granted security of tenure with the provision of water, electricity and sewerage at minimal cost. Those ignoring the layout will not have security of tenure and will not be provided with services.

Staged development within a general grid layout of major and minor roads, adapted to the topography, will allow incremental growth to meet annual population in-

creases and rehousing requirements, with a degree of flexibility that will accommodate more (or less) population than the Master Plan originally indicated and provide for coordination with development associated with New Ameriya and outlying rural settlements.

Greening the city

A regular pattern of development and the promise of security will go some way towards ensuring orderly layouts, but without trees and other vegetation the western expansion would not be attractive and would certainly be lacking those characteristics that make Egypt's 4 per cent of naturally watered fertile land so attractive to 96 percent of the population who live on it. Fortunately overcoming this deficiency and bringing peripheral areas of desert into cultivation poses no problem as observation of some already irrigated areas has amply demonstrated. Soil and subsoil conditions appear generally suitable and could be further improved by the incorporation of composted domestic refuse, turning "waste" to good use. What is required most of all is water and fertilizer. The use of nutrient laden sewage to make good this deficiency and to bring further areas of desert into cultivation would be beneficial on four counts. Agricultural expansion:

- would provide food for the growing population of the region;
- would provide rural employment and help to reduce pressures for urban growth;
- would inhibit desertification; and, finally but importantly,
- there would be less pollution in the Mediterranean, where the effluent would otherwise be discharged.

When Alexander conquered Egypt it was regarded as a source of food for the countries of southern Europe and the Balkans but now much of Egypt's foreign currency earnings are used to pay for imported food. The greater the amount of food that can be grown within the country the better off the nation will be. Furthermore with an increasing population additional intensive agriculture will provide not only food but employment. Food grown near to Alexandria can be supplied to an expanding market with minimum transport costs. Most irrigation has been in the past by Nile water fed to areas distant from the river by vast canals which have then been drained by a secondary but major canal system discharging into the sea. However the level of water behind the high dam at Assuan is at its lowest level for twenty years and, even in the unlikely event of generous replenishment of stocks in 1988 and subsequent years, it is clear that the limits of irrigation exclusively from the Nile are being reached.¹⁴

The housing program suggests a number of ways in which sewage effluent might be used in conjunction with Nile water. After inexpensive but effective treatment in ponds, each serving 200,000 to 250,000 population, or about two years' increase in population, the effluent may be fed directly into the existing system of irrigation canals or, to greater effect, into drainage canals allowing that water to be used for irrigation for a second time. A third possibility is to use the effluent directly on the land. Different methods may be used in different areas depending on local circumstances, including topography or the presence or otherwise of major irrigation or drainage canals. In not dissimilar circumstances 40 percent of

the waste water that used to be discharged into the sea from Israel is now recycled for agricultural irrigation and industrial use¹⁵ and there is no reason why similar or better results should not be achieved in Alexandria.

By whatever route the effluent reaches agricultural land it will be used to supply small holdings, of perhaps 5 or 10 feddans (1 feddan = 1.038 acres); to irrigate allotments cultivated by households whose primary employment is elsewhere, generally in industry or commerce; or to support the green belt that, in accordance with the Master Plan, will encircle the new greater Alexandria, reducing the air pollution from blown sand and at the same time providing recreation space for the population.

This system has the great merit of catering for incremental growth and allowing flexibility in operation. Because the optimum size of pond system serves about two years' growth, it is possible to add systems as the population grows, thereby minimizing inefficiently used expenditure. The effluent can be used with other irrigation sources in a variety of ways as may be appropriate from area to area and for a variety of uses as may be most suitable at different times. In every case sea pollution, the inevitable consequence of the pouring of inadequately treated effluent into the sea — the curse of Alexandria in several recent years — will be avoided. Quite apart from the long-term economic and short-term investment advantages of land disposal of sewage effluent, it seems to many inconceivable that in a country which is a signatory of the Barcelona Convention, anyone should even contemplate discharging effluent into the sea.¹⁶ In the long run however, the main criticism of such a policy would be seen to lie in the waste of resources that it represents, and resources should be conserved and used wisely.

Conclusion

Rapid growth demands bold planning policies and they, in turn, demand courageous political decisions. The Comprehensive Master Plan for Alexandria 2005 has been based on the advice of a wide range of people who know the city and its region well and have its interests at heart: the project team has had access to an equally wide range of information and has evolved methods of working and producing recommendations that are worthy of detailed study and cover a far wider range of topics than have been discussed here. They have recognized that whilst the inauguration of the plan is an important landmark for Alexandria, it is but a milestone in the city's development, in which planning must play a continuing and ever more important role. They have planned boldly, yet realistically, formulating proposals in what they see as

the best interests of the city as a whole. Proposals outlined or even only hinted at in the plan will require elaboration before they can be applied. A planning system must be developed that can respond to new challenges, quickly take up new ideas and opportunities and as rapidly abandon old programs, should changed circumstances so dictate. The quality of the environment, perhaps of life itself for the people of Alexandria, will depend on the decisions they make and the actions they take. "Somewhere in the heart of experience there is an order and a coherence which we might surprise if we were attentive enough, loving enough or patient enough. Will there be time?"¹⁷

This is the time for politicians and people to act, to realize the plans, for in their hands lies the future of Alexandria.

Notes

1. Alexandria Governorate and University of Alexandria Comprehensive Master Plan Project, *Comprehensive Plan Alexandria 2005*, Final report, January 1984 (Alexandria, 1984).
2. M. Riad, *Town Planning Review*, vol. XV, no. 4 (December 1933), p. 234, notes that Rhakotis, near where Pompey's Pillar now stands, apparently existed as long ago as 1300 BC as statues of that date have been found there.
3. Quoted, *ibid.*
4. *Ibid.*, p. 239.
5. J.H.G. Lebon, "The Islamic City in the Near East," *Town Planning Review*, vol. 41, no. 2 (April 1970), p. 185.
6. Riad, *op.cit.*, p. 240.
7. Under an ambitious new scheme a library and conference center devoted to Graeco-Roman and Arab civilizations and culture is to be developed in Alexandria in association with the University of Alexandria.
8. Lebon, *op.cit.*, p. 186.
9. E.M. Forster, *Alexandria: A History and a Guide* (New York, Doubleday Anchor, 1961) (written in 1915 and first printed privately in 1922).
10. It is estimated that the population has increased by over 800,000 since work on the plan began in 1980.
11. For example comments by Dr Fernando de Terrain, at the First International Congress of Great Cities, Mexico, D.F., May 1981.
12. Some of the car parking proposals have already been implemented.
13. Forster, *op.cit.*, p. 98.
14. I. Murray, "The mighty source of civilization is drying up," *The Times* (London, 5 November 1987).
15. "Cleaning the Mediterranean," *The Israel Economist* (January 1984), p. 42.
16. On a similar application in the USA see for example "Aquaculture: the Hyacinths that cleaned up San Diego" and "Isolation Tanks: the state of the art," *Esquire* (August 1983), pp. 123-124.
17. L. Durrell, *Justine* (London, Faber, 1975), p. 194.