

D evelopment and the Environment: A Case Study of Hvar Island, Yugoslavia.

by F.W. Carter

General Introduction

Increasing interest throughout the Mediterranean Basin in links between development planning and the environment are part of a much wider concern about the global impact of economic and social decisions on the future of our planet. There is a growing awareness of the need for greater attention to be paid to the natural environment within the context of development planning. Whilst the emphasis is on sustainable development, there has to be more appreciation of the fragile relationship between continued socio-economic growth and degradation of the natural environment. This has particular practical implications for the Mediterranean Basin, with its almost enclosed sea, where environmental degradation through air and water pollution provides serious debate for closer control of human activity within the region. Like the Black Sea, the Adriatic contains one of the 'water gates' into the eastern basin of the Mediterranean.¹ Although much remains to be done to extend our knowledge of the Adriatic world, the main outlines of its structural, physical and human history are clearly known. In recent years it has become possible to prepare regional syntheses of its constituent parts, enabling the Blue Plan, launched in 1979, to move toward fulfilling its most important function, i.e. providing realistic scenarios for sustainable, integrated social and economic development of the whole Mediterranean Basin.²

The Eastern Adriatic forms part of this complex region and contains the Yugoslav coastal province of Dalmatia, which stretches from the islands of Krk and Rab in the north almost to the Albanian border in the south and from the coast to the peak of the Velebit mountain range at around 1,700 metres above sea level. It is a province dominated by limestone mountains and the sea, in which there are few expanses of coastal plain; fertile flat land is therefore at a premium, both on the mainland and on offshore islands, where the heavily indented coastline leaves little opportunity for the location

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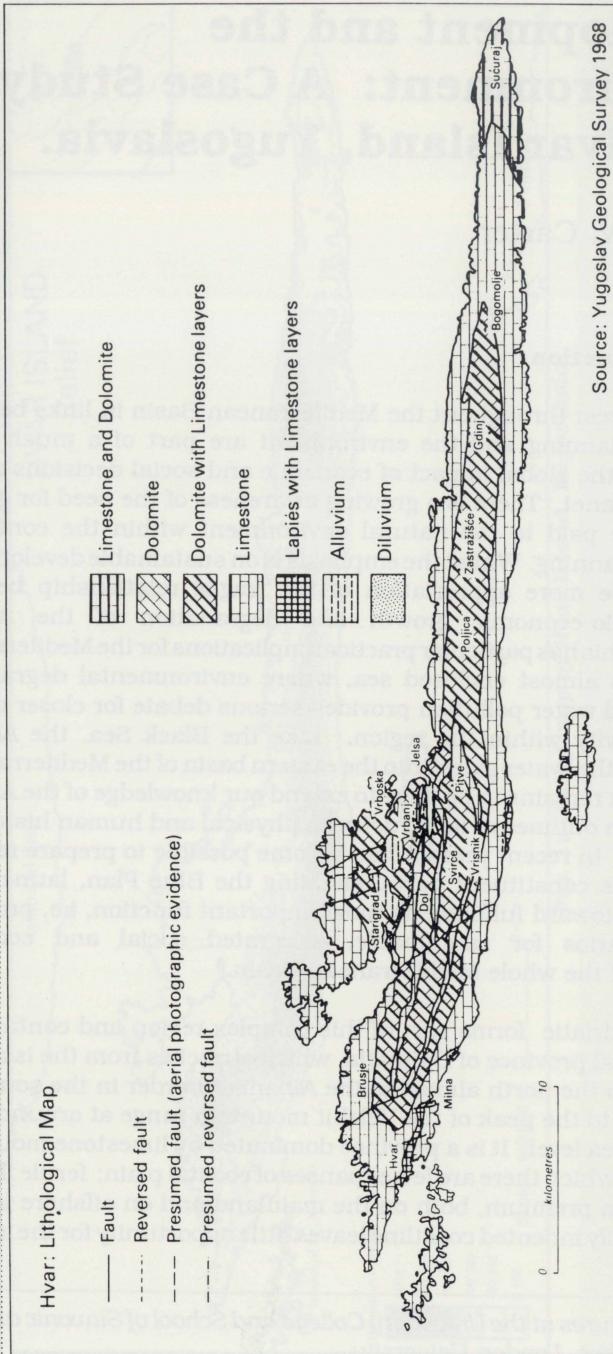


Fig. 1b - Lithological map of Hvar Island, Yugoslavia

of spacious arable lowland. It is within this context that this paper is set, against the background of one such offshore island, namely Hvar, in the central Dalmatian region. It is hoped to examine this island within the context of the Blue Plan, notably at the 'sea/littoral' level, within its two types of scenario: namely the 'trend' scenarios which view the future based on the extrapolation of past data, and the 'alternative' scenarios which explore the consequences of various development policies.³

Hvar Island: Site and Situation

Hvar is one of the largest islands in Dalmatia covering an area of 306 sq. kms (similar to Malta: 316 sq. kms), but with only 11,000 inhabitants, and is situated at its nearest point only 4 km from the Yugoslav mainland. It lies approximately on the same latitude as Marseilles in France (43 deg. 10'N) and measures 68 km from west to east; it is remarkably elongated particularly in its eastern part, its width only varies between 2-10 km (*Fig 1a*). Hvar comprises a bold, narrow mountain axis running across the island from end to end, rising to 626 m (Sv. Nikola) about 16 km from the western end of the island. The descent to the northern and southern coasts is everywhere steep but the crest of the range is bevelled for considerable distances to a comparatively level, narrow plateau surface about 330 m in altitude; the northern mountain slopes contain additional platforms at intermediate levels. Both the flat crests and these platforms provide sites for many villages. A very contrasting relief is found towards the western end of the island, north of the main mountain chain. Here lies a low fertile plain some 9 km long and about 3 km wide, known as Velo Polje. Geologically the island consists of Calcareous rocks,⁴ formed in an anticline composition with limestone in the middle and dolomites along the edges of the anticline. (*Fig. 1b*).

The island is favoured by a remarkably warm climate and equable winters; over a fifty year period, mean monthly temperature exhibited a smaller range than in any other part of Yugoslavia,⁵ and an average of only three days' frost in winter. A large part of the island supports a Mediterranean vegetation, whilst the higher crests are usually barren or bush-covered, but less elevated slopes are often quite thickly wooded. The vegetation is largely composed of evergreen pines and macchia, coupled with a profusion of aromatic and other herbs. Everywhere the soil is poorly developed consisting mainly of weathered limestone; small pockets of more fertile marls etc., are found in polje areas.

The island is rich in archaeological and historical remains dating from the Neolithic onwards (*Fig 2*), and there is evidence that some of the village sites have been inhabited since prehistoric times. Human settlement on Hvar has been increasingly investigated during recent decades ranging from finds of Neolithic painted pottery, Bronze and Iron Age burials and tumuli,

Greek and Roman colonization through to an appreciation of archival and architectural remains from the Venetian period, and the more practical results from the Austrian and French occupations of the island in the nineteenth century.

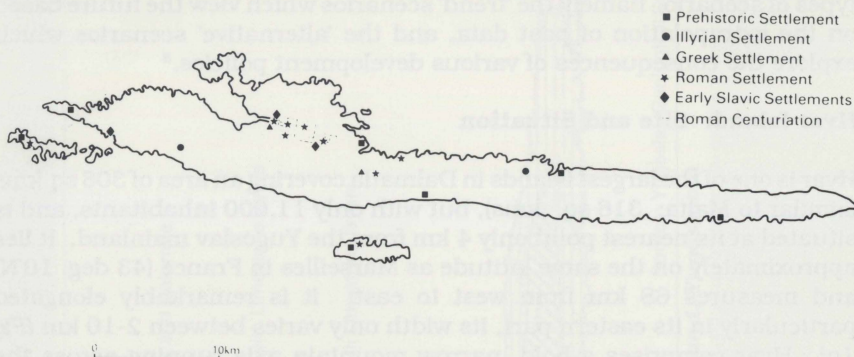


Fig. 2 - Archeological and historical remains on Hvar Island

Agriculturally the island has a typical Mediterranean production pattern, being noted for its wines, olive oil, rosemary and lavender essence, fruit and vegetables, livestock, salted fish, wood, honey and tinned sardines. There is also some boat building, marble quarrying and resin tapping, together with a plastic factory in the town of Starigrad. (Fig 3). Sheep are the only profitable livestock on the island; goats are also present but there are no cattle due to the lack of adequate grazing facilities. Tourism is the island's main industry, encouraged by the favourable climate, with Hvar known since the nineteenth century as the 'Adriatic Madeira'. Given this background, it is now possible to examine the development plans associated with the island in recent years and possibilities for future development.

The Role of Development Planning

After the trauma of the Second World War, a new era of development planning came to Dalmatia with changes in the planning system that would have been unimaginable in earlier periods. The changes introduced effected not only physical planning, but were also accompanied by new social styles and economic patterns resulting from a reformed administrative-institutional system based on the principle of self-management.⁶ Thus in examining the role of development planning on Hvar island these changes have to be understood.

The first plans for the island came with the help and supervision of the United Nations: the first plan was completed in 1968.⁷ This provided a Master Plan for the western part of the island, together with detailed plans

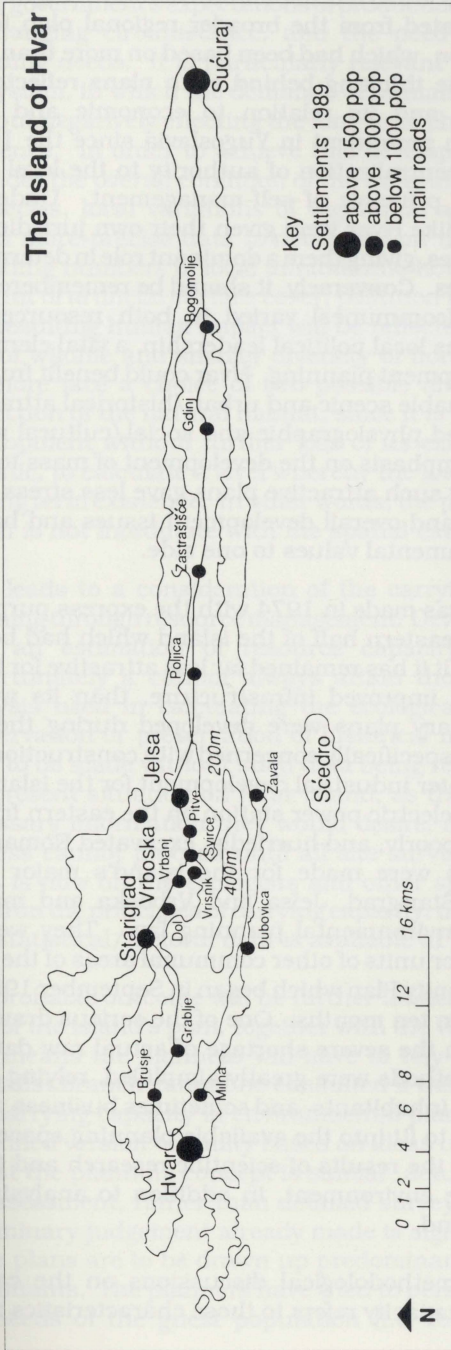


Fig. 3 - Settlements on the Island of Hvar

for Hvar town - Milna on the southern coast and the inland village of Malo Grablje.⁸ These plans emanated from the broader regional plan for the whole Southern Adriatic region, which had been based on more than thirty specific sectoral studies. The thinking behind such plans reflected the organization of government and its relation to economic and social development which had been prominent in Yugoslavia since the 1950's. Emphasis was placed on decentralization of authority to the level of the commune bound within the principle of self-management. Under this system, many of the islands like Hvar were given their own jurisdictional boundaries for these communes, giving them a dominant role in determining their own development policies. Conversely, it should be remembered that each of these sub-regions (communes) varied in both resources and physical attractions, as well as local political leadership, a vital element in any implementation of development planning. Hvar could benefit from this situation as it possessed valuable scenic and urban/historical attractions and constituted a well-defined physiographic and social/cultural region. Thus the 1968 plan placed emphasis on the development of mass tourism for the island: unfortunately such attractive plans gave less stress to the roles of urban conservation and overall development issues and had the effect of putting local environmental values to one side.

Another plan for the island was made in 1974 with the express purpose of giving more attention to the eastern half of the island which had been so neglected in the 1968 plan, but it has remained far less attractive for tourist development, in spite of an improved infrastructure, than its western counterpart. Other subsidiary plans were developed during the early 1980's, the one in 1985 being specifically concerned with construction area; this placed emphasis on greater industrial development for the island and led to the construction of an electric power station on the eastern fringe of Starigrad town, the site of a poorly, and hurriedly, excavated Roman villa. In 1988, new master plans were made for the island's major urban settlements of Hvar town, Starigrad, Jelsa and Vrboska and made in accordance with Yugoslav environmental planning law. They were the forerunners of spatial plans for units of other communal areas of the island to be embodied in the Community Plan which began in September 1989 and is expected to be completed in ten months. One of the serious drawbacks of this latter action has been the severe shortage of actual raw data. All previous spatial planning methods were greatly simplified, relying on the views of local authorities and inhabitants, and sometimes business people, which were then generalized to fit into the available planning space. Now there is much more need for the results of scientific research and factual analysis, particularly on the environment, in addition to analysing the spatial limitations of the island.

This has inevitably led to methodological discussions on the carrying capacity of space. Carrying capacity refers to those characteristics related

to the government's expectations of production, an area's ability to rehabilitate to changing circumstance, and the need to predict long term spatial planning needs. It is particularly relevant to the carrying capacity of the ecosystem, in which the demands of human development can be absorbed without negatively effecting the long term characteristics of an ecosystem's existence. In order to achieve this development, planners on Hvar must consider the overall condition of the natural habitat including the diversity of species, local variations of vegetation and other non-human factors. Much more precise data is necessary on the pressure of human activity including numbers of local inhabitants, how many cars enter an area, the amount of artificial surface cover, pollution levels and other similar factors. The resulting human impact will be reflected in loss of vegetational cover, loss of wildlife and smaller diversity of flora and fauna. Hvar's planners therefore face a choice of two possible alternatives; first to accept the protection of the natural habitat, since it is incapable of absorbing human development without further loss of its existence, or secondly and more realistic, to calculate a level whereby the loss of habitat does not endanger its long term existence. In other words, the planners must find a level of use which is not inordinate with the spatial carrying capacity of a given area.

This leads to a consideration of the carrying capacity in environmental planning through resource management. Development planning is concerned with an estimation of resource capacity, trends and future needs. Unfortunately it cannot always attain those levels of specific site data analysis used in calculating the ecological carrying capacity of nature conservation or preservation of historical monuments. In fact, decisions have to be made without such data being readily available. This is exactly the present situation on Hvar island, as the planners do not have all the necessary information they would desire, and the development planning process cannot proceed until all site surveys have been completed. The onus is now on the ecologists and other specialists to provide estimates based on the principles of carrying capacity, utilizing what existing knowledge and statistical/factorial data is available at this moment of time.

The probable outcome will be further limited by the ten month completion date of the island's plan, together with the views held by Hvar's politicians. This means the planners will have to rely heavily on estimates as every specialist branch cannot be consulted if the plan is to be finished on time. The carrying capacity in environmental planning on Hvar will have to be a simplified version of reality based on ideas used in ecological conservation. Whilst the planning concept is similar, actual application will have to rely on assessment, rather than detailed survey based on expert advice. One preliminary judgement already made is significant however, namely, that these plans are to be drawn up predominantly for the island's permanent inhabitants. The planners have tried to persuade the local authorities that the needs of the guest population (i.e. tourists) is not very significant

because the island has unique qualities worth preserving. The planners envisage a change in what the island has to offer tourists (i.e. attracting a better, more educated clientele) rather than to increase the number of hotels to suit the demands of mass tourism. This idea will not prove so appealing to the local inhabitants, dependent as they are on tourism as the island's main source of income. If the planners' ideas are accepted, then the role of environmental protection will be even more significant.

The Need for Environmental Protection

As early as 1945, the Yugoslav government passed a law on the protection of cultural monuments and natural rare phenomena: all subsequent post-war constitutions have clearly stated that all items of natural heritage would be protected by state laws. In 1971, the Yugoslav Federal Assembly adopted a document which laid down the *Foundations of Urban Policy and Land Development Planning*; here it specifically stated that the "protection and management of natural sites are an important social task" and agreed to formulate a new policy on natural heritage property. This policy maintained that "Man shall be ensured the right to live in a healthy environment, to have access to mountains, fields, shores, to have clean water and air, and to be protected from harmful substances and excessive noise. No one shall have the right by his activity to cause damage, pollute, destroy or in any other way degrade, the natural or urban environment".⁹

Nature protection and the cultural heritage are safeguarded by special laws integrated into urban and land development plans, which regulate in great details what should be preserved. In 1977, an inventory was made of all items belonging to the natural heritage which had been placed under protection on December 31st, 1976.¹⁰ This included national and regional parks, nature reserves, recreational and other protected natural sites, natural monuments (e.g. springs, watercourses, lakes, etc.), memorial monuments (memorial and historical sites) and horticultural monuments (parks, gardens, etc.). Such legal and social responses therefore equally apply to Hvar island; recent literature has re-emphasized these points when stating "The Communal Assembly of Hvar Island, with a firm resolution, takes great care that no industry endangers the island in respect of unpolluted air. Numerous significant awards have been made to the Hvar Commune in connection with ecology, which gives an even deeper meaning to the commune's achievements in maintaining an ecologically clean environment".¹¹

Yugoslavia's clearly defined environmental policy regarding the protection and management of property linked to the natural heritage, as legally defined, is unfortunately "not adequately implemented in practice, and the results achieved are not satisfactory."¹² As Violich maintains "the ecological and environmental forces and the intuitive judgement of relatively

unsophisticated people have been left aside in the interest of 'modernisation', 'development' and 'economic growth'.¹³ This often leads to architects and planners in Yugoslavia extolling this image for the sake of novelty and up-to-date designs (e.g. in house and hotel construction) rather than observing the heritage values of a site within the confines of its natural environment and the dictates of a region's cultural past.

Hvar island is no exception to this trend. Even so, the 1968 Master Plan for Western Hvar clearly states that development should be carried out in a way that ensures the protection and enhancement of natural, historical, aesthetic and other environmental values.¹⁴ It did however agree that tourism should become the main economic base of the area, with some development of agriculture and industry that was increasingly linked to the tourist market. It also stressed that the island should not stake its future on the mass tourist market. It envisaged a resident population in western Hvar of 33,000 inhabitants, three times more than the present total, capable of sustaining 43,000 tourists in peak season, with 60% in hotels, 30% in private accommodation and the rest in camping sites, hostels and weekend cottages. The number of cars should be limited to the estimated environmental capacity of 3,800; motorists should be encouraged to leave their cars on the mainland and transfer to the island by hydrofoil. It was suggested that visitors should arrive on western Hvar in the proportion of a quarter by car ferry, two thirds by hydrofoil, and the rest by passenger steamer.

Some of the plan's proposals have already been carried out. For example, a new car ferry has been established to the west of Starigrad (Vira), whilst a hydrofoil service connects Split harbour (not airport as proposed) to a few selected hotels (more were proposed) in 45 minutes. Similarly, some of the suggested spine roads, seven metres wide, connecting the four main towns (Hvar town, Starigrad, Jelsa and Vrboska) have been completed, linking them to the main arterial road which now runs the length of the island. However, certain environmental issues hinted at in the plan have yet to be resolved, particularly regarding water supply, pollution and conservation of cultural monuments.

Water supply is critical for any community, but non more so than places like Hvar island that experience up to five months drought during the long hot Mediterranean summer months. Prior to the early 1960's the whole island was dependent upon local wells, springs and reservoirs, together with what may be caught by rain gutters around houses. By the early 1960's all settlements to the west of Jelsa were served with piped water; the new system based at Jelsa was centrally placed within the main water catchment area, and able to supply much of the western half of the island by means of a new electric pump. The system was formerly administered by each of the main towns serving their area, but in the late 1960's the whole water supply was organized from the main centre, Hvar town, to reduce costs. This

entailed the construction of a tunnel from Jelsa to Zavalá on the southern coast and a water cistern in the tunnel was completed in 1969. To the east of the island the settlements remained dependent upon local supplies, because water pumping costs were seen as too high to serve villages already in decline.

The anticlinal composition of Hvar, with limestone in the middle and dolomites around the edges, allows the groundwater to flow eastward, and then northward along a transversal fault to Jelsa for collection in existing waterworks. Unfortunately, the island's average precipitation is only 722mm; there are no permanent streamflows, and due to its elongated shape, no strong currents are formed after heavy precipitation. With increasing emphasis on tourism, the greatest problem for further development is posed by limited water supplies.¹⁵ The situation is becoming increasingly serious due to the network conditions and the quality and quantity of water. Some settlements like Vrboska have their own water supply, but it has a tendency to saltiness, its hotels having to be supplied by sources from elsewhere, e.g. Jelsa. Perhaps more serious, poor pipe maintenance is allowing increasing quantities of salt water into the system, as experienced in the summer of 1989 when rainfall levels were exceptionally low.

In summer, tourist numbers swell demand; average water consumption reaches 250 litres per consumer/day, i.e. a flow of 100 litres per second, but groundwater supplies provide only 70 litres per second. A feasibility study has predicted long term water demand at 196 litres per second, i.e. another 226 litres per second or 20,000 cubic metres per day. The 1968 Master Plan foresaw this problem and suggested storing winter surplus from springs in a new dam at Dol village, but this has not materialized. Water deficiency now has to be supplemented by a submarine pipeline connected via Brac Island with the mainland. This utilizes the Cetina River supplies, already in great demand throughout Central Dalmatia, as they provide the only consistent water supply in the area throughout the year. Nevertheless this was found to be the only way to ensure sufficient quantities of drinkable water quality on Hvar from a sanitary viewpoint, particularly during the summer month when salt pollution levels are at their greatest.

Any increase in numbers of tourists places more stress on the sewerage system. The 1968 Master Plan advocated that all sewage should be piped, treated and then discharged into the sea, based on a system of linking settlements, hotels and camp sites to a minimum number of separate sewerage systems, which were to be built consistent with the island's topography.¹⁶ More isolated settlements would be provided with septic tanks. In spite of these recommendations much has still to be achieved. During the summer of 1989, raw, untreated, sewage effluent was still being ejected into the sea, in some cases like Starigrad, straight into the harbour which is part of a long, narrow, elongated bay. Furthermore, poisonous

waste from the town's local plastics factory, some of it between 20-40% in insoluble form, was also leaked into open canals leading to the waterfront.

Refuse disposal has also left a lot to be desired. Whilst the 1968 Master Plan specifically suggested a central location for refuse burning to the north of Zavalal,¹⁷ away from settlements and tourist establishments, this has not been realized. At present refuse dumps adorn the sides of main roads, e.g. Hvar town - Starigrad rout, where rubbish is used as infill for dry valleys, with the resulting bad smells and health hazards associated with such sites. In Starigrad, local refuse is burned on the nearby hillside above the town, adding smoke pollution to that already created by the chimney stacks of the local plastics factory. The prevention of tipping rubbish by local inhabitants has not been strictly enforced by the local authorities, allowing the coast and surrounding countryside to subsequently suffer.

Finally, any development must take care of the historical environment. This involves the conservation of cultural monuments as the island is unusually rich in remains from the prehistoric, ancient, mediaeval and renaissance periods. Fortunately, since tourism has been on the island, over the past century, the townscapes and landscapes have only been marginally destructive for the historical monuments. If there is to be a continuing growth of the island's tourist industry, this will encourage more building projects for hotels, restaurants, marinas and extended, improved communication networks, which in turn will pose a threat to Hvar's physical heritage. A response to this threat has led to the formation of the Hvar Project, consisting of an international and multi-disciplinary venture consisting of scientists from several European and North American institutions, whose main aim is to preserve the island's heritage in its present form.¹⁸

One of the main aims of the project is to provide scientific and specialist advice to support the island's authorities in the preparation of a cultural and ecological environmental stability programme, as an integral part of Hvar's overall economy (Fig. 4a). The island's rich heritage dates back to the Early Neolithic, when its first settlers arrived around the fourth millenium B.C. Caves (e.g. Grabceva Spilja) have yielded important information on the island's life at this time,¹⁹ followed by later Bronze and Iron Age relics connected with the Illyrian peoples, especially in the form of tumuli.²⁰ The Hvar countryside has also revealed the remarkable landscape of Velo Polje (between Starigrad - Vrboska) which deserves to be preserved and maintained in its entirety as a national park. It contains a well-preserved, large scale, hellenistic field system, emanating from the foundation of a Greek colony (Pharos) on the island at Starigrad (385 B.C.), as well as considerable number of Greek and Roman rustic villas;²¹ other areas contain much later isolated buildings such as the aristocratic summer residences dating from the sixteenth to nineteenth centuries. The urban centres also have

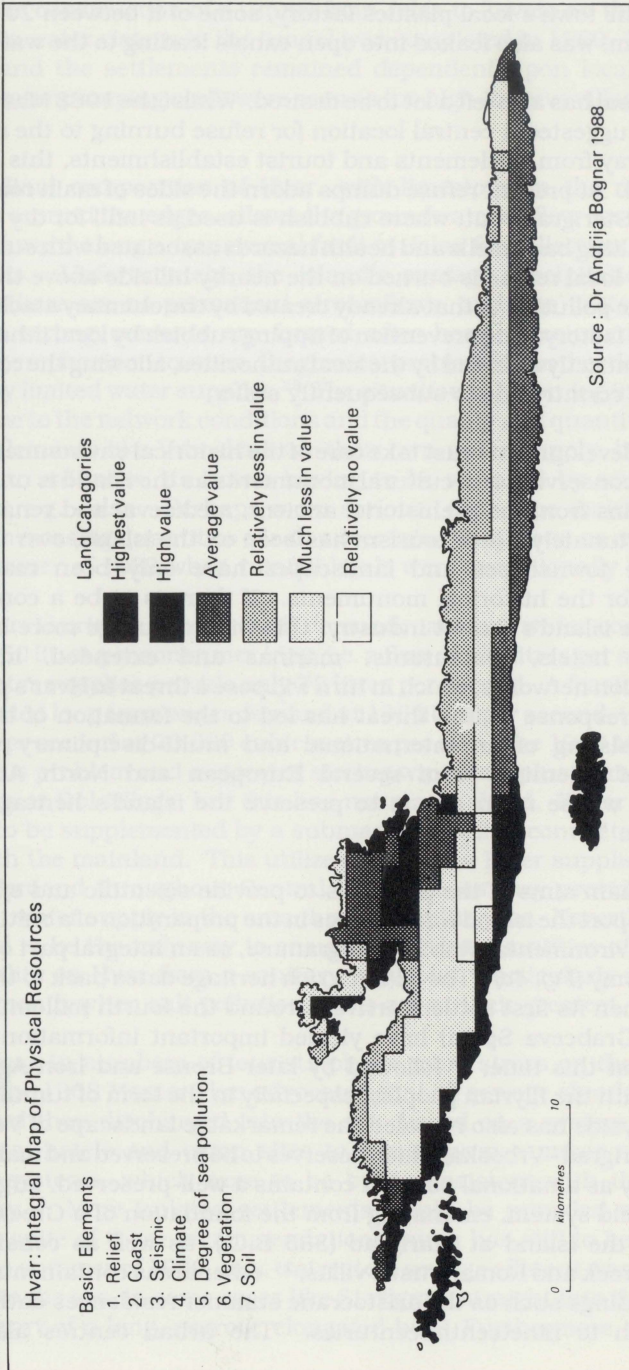


Fig. 4a - Hvar - Integral map of Physical Features

important monuments located in the large sectors of their historic buildings, while many of the villages possess significant examples of housing from renaissance to pre-modern times.

The fear of the project is that much of this priceless heritage could be lost if greater care is not taken with the island's resource management. Research by the project has already revealed circa 545 archaeological localities on the island, over twice the previous known number. More disturbing is the state of their preservation recorded by the team; of the 163 tumuli on the island, nearly a quarter have been totally destroyed, a fifth have suffered some damage, whilst a further fifth have been previously excavated; only just over a third were in a well-preserved condition. At present, the most significant destruction process results from stone robbing for building purposes, and has directly resulted in 39% of all tumuli being destroyed. Other causes included pipe laying, new road construction and agricultural clearance.²² Besides their archaeological significance, these and other early cultural monuments have economic value as major tourist attractions, which could be prepared for public viewing with little effort needed.

Another serious problem comes for the threat to build an airport on the island. Since the early 1960's Hvar Commune local officials have treasured the idea of having their own island airport. A report in 1962 extolled the virtue of an international airport on Hvar, located on Velo Polje, the island's largest area of flat land, and only 20 km. from the island's capital, Hvar town. It was planned to build a 1,200 metre runway capable of taking DC-3's, with a considerable number of airport buildings and a concrete surfaced area for serving "thousands of domestic and foreign tourists" by 1963.²³ So far this idea has not become reality, although discussion continued to rage in the local press and elsewhere on the pros and cons of its construction.²⁴ From an environmental and cultural viewpoint it would be a disaster, not only from excessive noise (denounced in the 1971 planning document), fuel discharge causing air and water pollution over such settlements as Starigrad, Jelsa and Vrboska, but also the destruction of rich archaeological remains located there and catalogued by the Hvar Project. If an airport is necessary on the island, and that in itself is debatable, then perhaps it should be located along the slightly bevelled crest (slopes of 0-2 degrees) in the eastern half of the island between Gdinj and Bogomolje, using light Canadian DASH-7 aircraft, having a capacity of 50 people for short transfer flights from Split airport on the mainland (*Fig. 4 b*). Investment earmarked for the airport would perhaps be better utilized for improving the island's water supply, pollution problems and cultural heritage, rather than a large, prestige project which has not been proved entirely necessary.

Finally, more attention should be paid to some of the island's urban cultural monuments. Again, the 1968 Master Plan called for the historic town

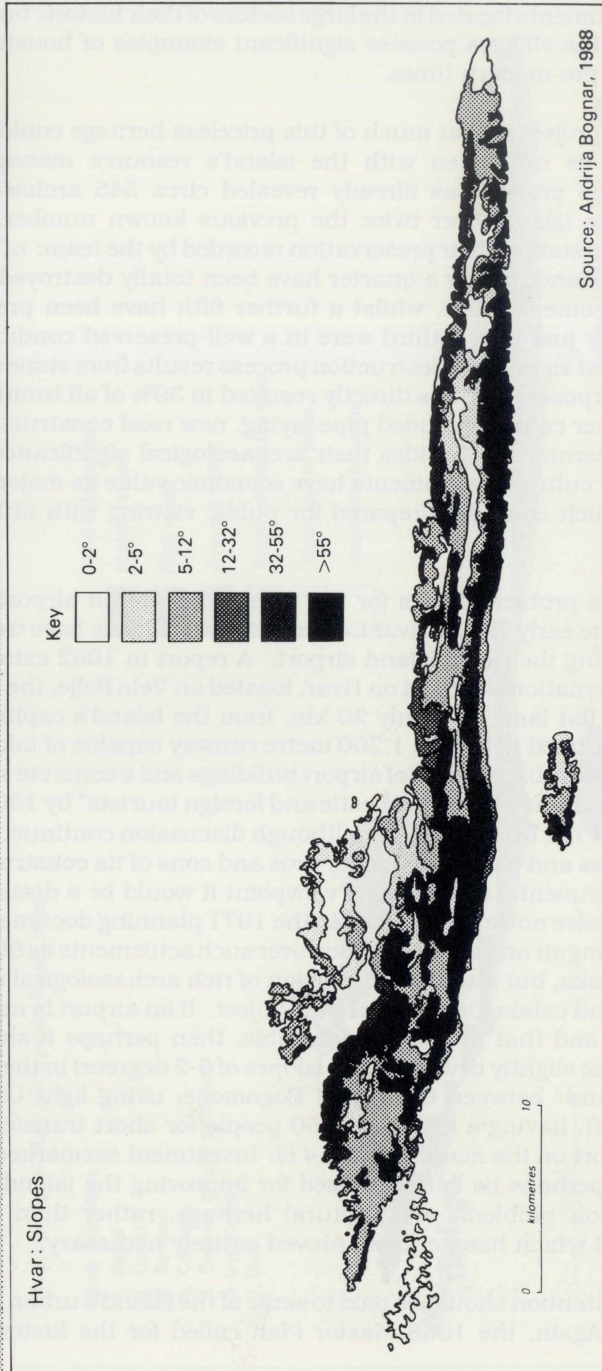


Fig. 4b - Slopes on Hvar Island

centres and villages to be preserved intact. Shops, restaurants, offices and other service places could be concentrated in town centres in order to provide an economic use for old buildings in need for restoration and repair. Furthermore, new buildings in or close to historic cores should be so designed as to enhance urban unity, and allow the surrounding natural landscape to dominate the skyline. Overall much of this has been achieved, probably more due to lack of finance than in accord with aesthetic ideals, but some places like Hektorovic's palace in Starigrad, home of the island's most noted literary figure, ²⁵ could be greatly improved by renovation.

The Future: the significance of Hvar's cultural heritage

Inevitably, this leads to the obvious question of the island's future and the role of cultural heritage. Firstly, the principle of protecting Hvar's archaeological heritage, i.e. preventing the loss of tangible and intangible components of its history, is the cornerstone for all archaeological management functions. The same arguments that are applied to preserving other non-renewable resources, e.g. natural gas, can also be applied to archaeological artifacts. ²⁶ The central aim of the Hvar Project is the analysis and interpretation of the island's historical development and natural history. The prime reason for such a concentration of international research on the island is due to its remarkably rich and diverse monuments and cultural landscape. Secondly, greater attention must be paid to the plight of many inland villages which are suffering from de-population and decline. There is a need to reappraise their role in Hvar society, but students of the rural landscape face two major problems; they must understand what is there, visible, still lived in and used, and then they must seek to identify the processes which are, and have been, at work causing change. ²⁷

At present there appear to be three options open to the planners for the development of the island. First, they can encourage the growth of mass tourism with the possible disastrous results experienced in other parts of the Mediterranean Basin, e.g. Spain. By placing primary emphasis on a mass tourist facilities programme, it can become an overpowering goal in itself, rather than a means to an end. Alternatively, sufficient emphasis could be given to the development needs of the people of Hvar's urban and rural system, by determining long-range development goals based on a perspective of past cultural heritage and assure a sounder social and economic future.

Secondly, there could be increased industrial development on the island, but this too could lead to disaster. There are a few mineral resources, e.g. stone quarrying, to provide a base for industry and everything, including energy and raw materials, would have to be imported from elsewhere i.e. mainland Yugoslavia, or abroad. Agricultural development is limited, with nothing at present being produced for the export market. One possibility

is the model of two employments popular throughout much of the Mediterranean, whereby families have some members working abroad, e.g. 'gastarbeiters' in West Germany, and others tend the local farm plots. This may stem the rural exodus, with villages geared to supplying Hvar's tourist market.

Thirdly, and probably the most attractive idea, would be to develop cultural heritage tourism which would cater for the more educated, sensitive and possibly wealthier clientele, who demand more from their vacations than just sun, sand and sea. This idea would involve initially considerable investment, to provide the backcloth for would-be tourists to appreciate the wealth of the island's cultural background. First, it would involve investment in the architectural heritage on the island. In Yugoslavia, the value of architectural heritage is divided into three categories: category I includes those of broader national and international importance (entered in the UNESCO Register of World Heritage) and many Dalmatian towns, including Hvar, have been considered for inclusion in the inventory of the world's cultural properties;²⁸ secondly, category II, those of national and lesser cultural significance, of which numerous examples are found on the island; and thirdly, category III, all other cultural properties which are of sub-regional or local significance.

This latter group may secondly invite investment into the numerous inland villages scattered throughout the length of the island, many in need of repair and restoration. One practical suggestion would be to develop these villages, by preserving their natural architecture, which in turn would provide a better tourist environment than the hotel complex. Regeneration of local agriculture would be made through tourist demand, whilst improved road networks would give visitors easy access from the inland villages to the coast. The 1990 Master Plan envisages creating new villages near to urban settlements, involving considerable expense in providing a completely new infrastructure. The older villages already have water, sewage, electricity, etc., and would demand much less finance for improvements. There would also need to be stricter control on new second home construction in these old villages, to avoid present practices of illegal construction, and the use of modern, look-alike, mundane architectural designs found among developments already made around towns like Starigrad.²⁹ Stricter laws should also be enforced against dwellings built along the coastline. For example, the 1969 Master Plan suggested parts of the coast should be free of such dwellings, e.g. between Jelsa and Vrboska, yet twenty years later there is an almost continuous line of buildings between these two settlements.

Thirdly, investment could be forthcoming for the creation of a permanent base for international fieldcourses and research teams working on the island. Such an establishment could provide facilities for exhibitions and other educational displays, which would serve both the island's resident

population and the considerable seasonal tourist numbers. At present, liner cruises en route from Venice to Dubrovnik anchor two kilometres off Hvar, for lectures about the island. Such tourist potential could be brought ashore, driven to a cultural heritage centre and receive instruction there, providing a much more realistic view of the island's history. If a cultural heritage centre is to materialize, this would demand the creation of a consortium consisting of local tourist organizers, republic and/or Yugoslav representatives, and a major source of external funding, e.g. European Economic Community. Such negotiations are already in their early stages, but it remains to be seen if plans reach fruition.

Conclusion

The foregoing pages have outlined the role of development and the environment on an Adriatic island, blessed with distinctive natural beauty, a long history of human activity and a wealth of cultural heritage. Development proposals through former and present Master Plans reveal some need for careful environmental protection, which has not always been meticulously followed in the race for economic growth through the attraction of both domestic and foreign tourists. The subsequent emphasis on 'modernization', with new hotel complexes, marinas and the whole tourist infrastructure, has tended to push environmental degradation problems into the background.

Increasing fears throughout the Mediterranean Basin of growing environmental abuse, and reiterated in the Blue Plan, have refocused attention in Hvar on the dilemma between more economic development, or a safer environment in which to live. Questions about the latter have emerged as evidenced by poor water supply, increasing air and water pollution, the possible demands of a new airport, and the threat to the island's cultural monuments. Contemporary planners reject the growth of mass tourism, stressing the need to improve the life style of the local inhabitants, but this does not solve the necessity for economic activity on Hvar, if emigration from the island is to be repulsed. Neither industrial development nor large-scale agricultural methods provide a satisfactory solution to the problem. Perhaps the best answer is to develop selective tourism, which appeals more to the educated and often wealthier type of visitor, who would appreciate the variety of cultural experiences the island has to offer. Such ventures have proved successful elsewhere, as in the case of the city of York in Britain. This is the hope of the Hvar Project, which is trying to revitalize the island's cultural heritage, advocating better resource management methods within the spirit of the Mediterranean Action Plan. This would ensure future would-be tourists will have something to see and appreciate when they arrive on Hvar.

Finally, one must not forget the fragility of island economies, and the danger

in the case of Hvar may emerge from too much dependence on the mass tourist market. By its very nature mass tourism is a fickle phenomenon, which can disappear as quickly as it arrives. Selective tourism is less volatile, and though much more elitist will always guarantee visitors searching for new experience in the Mediterranean Basin, the cradle of so many cultures and civilizations. If development and the environment are to work hand in hand on Hvar Island, considerations outlined above have to be taken seriously, not only by the Yugoslav planners and local politicians, but also by the islanders themselves.

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