

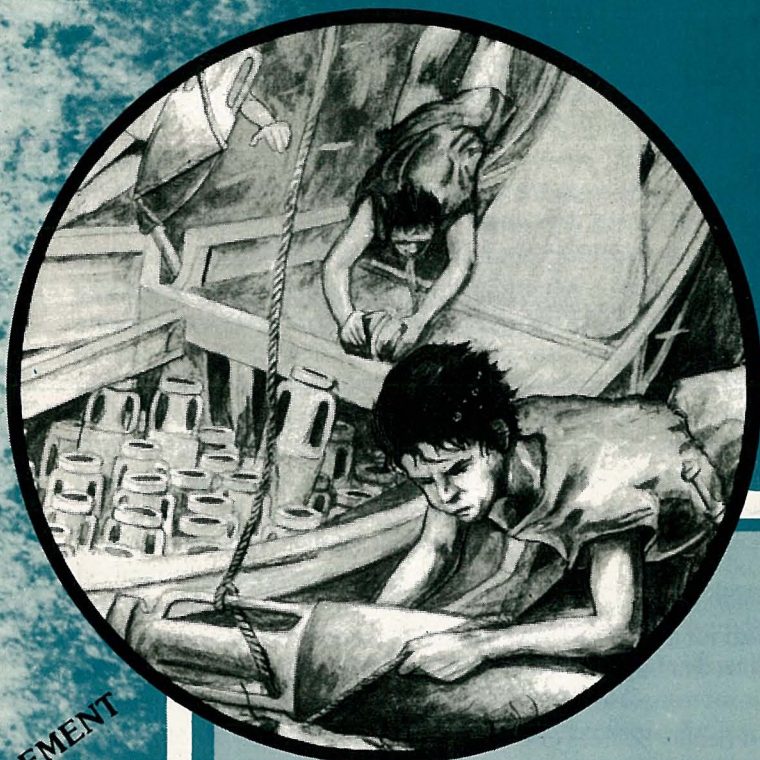
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Cover picture: An artistic impression of an underwater recovery of archaeological remains in ancient times. (Illustration by Serge Ridard on cover *L'Archéologie Sous-marine*, 1986.)

UNDERWATER ARCHAEOLOGY: A NEW TURNING-POINT IN MALTESE ARCHAEOLOGY *

Anthony Bonanno

Introduction

Since prehistoric times the Maltese islands have been the destination, or convenient stop-over, of an ever-increasing sea traffic which plied from one end of the Mediterranean Sea to the other. At times they became the undesired and tragic terminations of voyages directed elsewhere. All this could not but enrich the waters around the islands with a wealth of relics of this intensive human maritime activity. In view of this it would appear unthinkable and unjustifiable that a country surrounded by the sea, like Malta, should remain without a proper administrative and technical set-up to explore scientifically and safeguard this heritage. Nevertheless, it took almost a quarter of a century from the acquisition of independence for the Maltese nation to realize the importance of this heritage and to take concrete measures to protect it. Underwater archaeology is, indeed, a late-arrival in the scene of the Maltese heritage management.

Between 1989 and 1990, when the present writer was in charge of the Mediterranean Archaeology Centre at the Foundation for International Studies, the Centre was commissioned to prepare a document related to underwater archaeology on behalf of the Regional Activity Centre for Specially Protected Areas (based in Tunis) as part of the Mediterranean Action Plan of the United Nations Environment Programme. The document was completed in 1990. It consisted of three parts: a) a directory of researchers and research institutions concerned with Mediterranean underwater archaeology; b) a directory of the legislation concerning the underwater archaeological heritage of all the countries bordering the Mediterranean; and c) a report on the state-of-the-art techniques and apparatus in current use for underwater archaeological exploration. The latter report was prepared by Mr Reuben Grima, then a student reading Archaeology as part of the B.A. programme at the University of Malta.

Until a couple of years ago the proper infrastructure for the safeguard and the evaluation of the underwater archaeological heritage of the Maltese islands did not even exist. On paper this heritage, by law, fell within the jurisdiction of the Museums Department which, however, simply did not have the personnel to

enforce the existing legislation. For the same reason, there was little or no possibility of compiling an up-to-date inventory of the stock of shipwrecks and other archaeological remains in Maltese territorial waters. It was only after the appointment of our former student Reuben Grima as Assistant Curator, following his graduation from the University of Malta in 1992, that the Museums Department could avail itself of the services of a properly trained person who was able and competent to undertake the serious and efficient evaluation of this part of the Maltese archaeological heritage. As a result, the Museums Department, with the invaluable assistance of a number of local and foreign bodies, is now in the process of drawing up a programme of the long-term strategies for the protection and the study of this precious heritage.

Concurrently, it should be pointed out, another Maltese institution which is responsible for the overall protection of both the natural and the cultural environment, the Planning Authority, has just started to systematically take stock of the underwater archaeological resource as part of the exercise of the preparation of the local plans for the Maltese islands. While this paper is being recast, the underwater archaeological resource of the northwestern half of Malta is being assessed.

Fortunately, before his appointment with the Museums Department, Reuben Grima had already involved himself deeply in local underwater sporting circles and he had formed, therefore, the proper connections to be able to prepare and present a programme of education and sensibilization meant to raise awareness among the members of several of the local diving clubs.

Before 1988, the only underwater discoveries of archaeological objects which took place in Maltese waters were purely fortuitous. A noteworthy exception was the systematic excavation of the Roman shipwreck carrying a cargo of mortars at Mellieha Bay by a team led by Honor Frost, the results of which campaign were published in 1969. Those recoveries which took place with the proper permissions from the competent authorities can be counted on the fingers of one hand. A special mention must be made of the massive lead stock of a Roman anchor, the largest known example, which was recovered from Qawra Point, near St Paul's Bay in 1963. In 1961 and 1970 a diving team from the Imperial College of Science and Technology of London, made up, it seems, of engineers and doctors, recovered several archaeological objects from off Xlendi in Gozo. A report of these campaigns on what is a site of extreme importance can be consulted in the archives of the National Museum of Archaeology. A map containing the locations of the then known underwater archaeological relics was published in the preliminary report of the *Missione Italiana a Malta* for 1964.

In addition to these authorised recoveries, one often used to hear of

archaeological objects, mainly amphorae and Roman anchor stocks, which had been accidentally discovered and brought up from Maltese waters without ever being reported to the Museums Department, or of more organized depredations carried out by foreign divers using their own boats.

Recent Underwater Investigations

Between 27 September and 20 October 1988, Specialist Archaeological Systems, an English diving group led by Dr Margaret Rule, best known for her recovery of the *Maryrose* conducted several surveys of promising sites off local shores.

The main aim of the expedition was to carry out an extensive hydrographic survey inside the Grand Harbour and at St Paul's Bay. It was said on various occasions that the actual purpose of this latter survey was to attempt to identify the ship which was carrying St Paul to Rome and which, as one can deduce from the Acts of the Apostles (Chap. 27-28), was wrecked in the area. At the completion of the expedition, there were no claims for any success in this area of research.

The survey in the Grand Harbour, on the other hand, was intended to identify wrecks connected with the Turkish Siege of 1565. The sophisticated equipment used identified many anomalies on the bottom of the harbour, but further visual verification and actual removal of silt deposits failed to give positive results. Although the final report has not yet been published, the preliminary conclusions can be consulted in a cyclostyled report, *Specialist Archaeological Systems, Malta Archaeological Survey 1988. Preliminary Report Submitted to the Government Departments of Tourism and Education*, dated January 1989.

A French mission, which carried out its work between 11 and 22 December 1992, had a greater success and achieved much more tangible results. The team consisted of Luc Long, Guy Dauphin, and Albert Illouze of the *Département des Recherches Archéologiques Sous-Marines*, better known as DRASM. On the Maltese side they were joined by the archaeologist Reuben Grima and by Michael Gauci, Mario Micallef and Charles Tanti, professional divers and instructors. The main aim of the mission was to draw up a map-inventory (*carte-inventaire*) of the Maltese marine archaeological heritage, identifying remains, anchorages, isolated objects and submerged structures.

Of this mission, I would like to single out the survey carried out around a large section of Manoel Island, inside Marsamxett Harbour. The presence on this island of a quarantine hospital, better known as the 'Lazzarett' (in use from 1643), and of a massive defensive fort (1723) must have generated an extensive human activity in the waters around it, giving the entire site a particular importance. Moreover, the imminent development projects for the island and

its surrounding shores present a very real threat for any archaeological remains and deposits that may lie on the bottom off the island. It was for this reason that the mission paid particular attention to this site.

The team carried out its work right in the midst of intensive maritime activity. In general the sea-bed nearest the hospital was found to be covered with an accumulation of modern detritus partially covered with sand. Beneath the superficial strata, it is believed, there must certainly be older human deposits. The presence in several places of fragments of pottery datable to the seventeenth, the eighteenth, and the nineteenth centuries, which were discovered accidentally after the silt on the bottom had been disturbed by the propellers of boats, seems to confirm this thesis. A fragment of an amphora testifies to the possibilities of even more ancient remains.

The DRASM mission also carried out archival research at the National Library, in addition to on-site inspections in a number of other localities such as Xlendi, the channel between Gozo and Comino, Mellieha Bay, and Ras il-Pellegrin. A preliminary report of the work carried out by the French mission can be found in a cyclostyled report entitled '*Rapport Malte 1992*' signed by Luc Long.

1992 seems to have been a bonanza year for Maltese underwater archaeology because it also saw the publication of the corpus of shipwrecks of the Mediterranean patiently compiled over a great number of years by the well known underwater archaeologist, Dr Anthony Parker of Bristol University. The publication contains an important section on the archaeological discoveries recorded in Maltese territorial waters.

The most important development in the field of Maltese underwater archaeology took place, however, in depths of more than 100 metres. This research was carried out during the visit of the Triton, a French navy ship specialized in rescue operations in depths which are not normally accessible. The Museums Department had proposed such a survey to the French authorities and it was made possible thanks to assistance of the French Embassy in Malta and the Maltese Ministry of Foreign Affairs.

Unfortunately the Triton's visit in March 1993 was marked by bad weather and it was only on the last day that the ship could carry out its projected mission. The ship was equipped with various sophisticated equipment intended to carry out reconnaissance and salvage operations in immensely great depths. For this particular one it was decided to make use of the Griffon, a small submarine which was built in 1972 and subsequently modified in order to reach depths of 600 metres. The submarine also has a plexiglass hemisphere which permits a clear vision of the outside, television cameras, and two extremely versatile mechanical arms.

For reasons of security the site inspected has been described as 'off the southern coast of Gozo'. The operation itself was a very delicate one and it was made even more difficult by the sea which was still quite stormy. A sonar transmitter was placed on the sea-bottom to assist in the manoeuvring of the submarine and to control its movements. Reuben Grima was allowed to descend in the vessel together with three French navy officers. It was reported that on the bottom 'at a depth a number of times deeper than can be reached with normal means of diving' there was a deposit of more than 90 amphorae almost all of the same type, the ovoid-shaped amphora typical of local Punic production. It could very well have been a single homogeneous cargo. Although this type of amphora is often found locally, particularly in funerary contexts from the fifth to the second century BC, it has rarely been encountered in underwater deposits and certainly never in such quantity. This is by itself already an important discovery that will help in the study of the economic and commercial history of Malta in ancient times. It is hoped that further studies of these remains will throw even more light on the subject. Indeed, the Griffon, by means of its mechanical arms, recovered a fragment of amphora, incidentally of the Dressel 28 type, of which only a few examples were noticed on the seabed.

During another visit of the DRASM mission in November-December 1993, attention was concentrated on a full-scale rescue excavation of a thick archaeological deposit in very shallow waters inside Marsascala Bay which had been exposed by dredging operations in previous years and eventually reported to the authorities by Mr Albert Brian Rosso, a local diver. From under a thick blanket of poseidonia, the Franco-Maltese team recovered animal bones and ceramic material mostly datable to the 5th-7th centuries AD. Given the homogeneity of the material, the excavators tend to think it might consist of a shipwreck with a part of its cargo, even though no part of the ship's wooden structure, except for a possible small piece, was found.

The Underwater Archaeology Section in the Maritime Museum.

Another important development in the study of Malta's maritime heritage was the inauguration of the Maritime Museum which is housed in the imposing building of the former Naval Bakery of the British Fleet at Vittoriosa. The person behind the initiative was the then Minister of Education Dr Ugo Mifsud Bonnici (today the President of Malta) who set up a Steering Committee to see to the realization of this project. The present writer had the honour of being nominated to sit on this committee and, eventually, to take up its presidency following the demise of Judge Stephen Borg Cardona.

The Museum was officially inaugurated in 1993, thanks to the sterling work

put in by its present curator, Mr Antonio Espinosa Rodriguez. So far only one part of the building has been opened to the public and further work is necessary to complete the project. The Steering Committee was, therefore, replaced by an Advisory Management Committee for the Maritime Museum to oversee the proper management and development of the Museum. The present writer continued to occupy the chairmanship of this committee.

The section of the Museum dedicated to underwater archaeology is still in process of completion and it is intended to set up a didactic exhibition. The present display is limited to Roman remains and the relevant authorizations have been given by all the authorities concerned to transfer the massive Roman lead anchor stock from the National Museum of Archaeology in Valletta.

Conclusion

This paper could very well have been entitled 'A new future for underwater archaeology in the Maltese Islands'. In it I have tried to highlight the important steps made over the last couple of years. A lot has happened in a relatively short time. A lot more needs to be done to bring our nation in line with our European neighbours. This requires a considerable investment in terms of financial and human resources; it stands to reason that underwater archaeology is even more expensive to undertake than land archaeology. But everyone agrees, one would hope, that our country has achieved a sufficient degree of prosperity and overall advancement in various fields to enable it to look after its own cultural heritage, including that concealed by the water that surrounds us.

* This paper is a revised edition of an account of the recent developments in underwater archaeology given by the writer at the 8th *Rassegna di Archeologia Subacquea* held in Naxos, Sicily in October 1993. It also includes recent researches and discoveries made since then.

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THE INDUSTRIAL MINERALS OF THE MALTESE ISLANDS: A GENERAL INTRODUCTION

Lino Bianco

Oligocene and Miocene shallow water carbonates form the entire Maltese archipelago. The exposed stratigraphic sequence is capped by and resting on shallow water limestone formations. The formations are frequently fissured. Of the various islands of the archipelago, only Malta and Gozo display the whole stratigraphic sequence.

The geological succession of the Maltese Islands is given in Table 1.¹ A general account and discussion of the various formations can be found in Zammit Maempel's book *An Outline of Maltese Geology* (1977). The geological map of the Maltese Islands is given in Figure 1.²

UPPER CORALLINE LIMESTONE FORMATION up to 162 m		TORTONIAN	MIOCENE
GREENSAND FORMATION 0 - 12 m		SERRAVALLIAN	
BLUE CLAY FORMATION 0 - 65 m		LANGHIAN	
GLOBIGERINA LIMESTONE FORMATION 23 - 207 m	UPPER UPPER PHOSPHORITE	BURDIGALIAN	
	MIDDLE LOWER PHOSPHORITE	AQUITANIAN	OLIGO- CENE
	LOWER	CHATTIAN	
LOWER CORALLINE LIMESTONE FORMATION over 140 m			

1. Pedley, H.M. House, M.R. and B. Waugh, B., 'The Geology of the Pelagian Block: The Maltese Islands', *The Ocean Basins and Margins*: vol. 4B: The Western Mediterranean, Nairn, A.E.M., Kanes, W.H., and Stehli, G.G., editors, vol. 4B (Plenum Press, 1978), 417133.

2. Pedley, H.M., 'A new lithostratigraphical and paleoenvironmental interpretation for the coralline limestone formations (Miocene) of the Maltese Islands', *Overseas Geology and Mineral Resources, Institute of Geological Studies*, London, vol. 54 (1978).

INDUSTRIAL MINERALS

All the industrial minerals on Malta are sedimentary in origin. They comprise limestone, clays, sandstones and phosphate. It is widely held that the quality of these minerals varies a lot. Although various studies were undertaken on the quality and durability of local limestone, no systematic investigation was ever undertaken. The *Malta Structure Plan* (1991) stated the need for evaluating and assessing the mineral resources of the Islands.

Limestone

This is the main industrial mineral of the Islands. In the last century it used to be exported to a number of Mediterranean countries including Greece, Turkey, and North Africa.³ Locally, five types of limestones were utilized. These were:

- a. First-quality limestone (locally : *żonqor tal-prima*);
- b. Second-quality limestone (locally : *żonqor tas-sekonda*);
- c. Third-quality limestone (locally : *franka*);
- d. Second-class third quality limestone (locally : *soll*);
- e. Heat-resistant limestone (locally : *ġebbla tal-kwiener*).

First- and Second-quality limestone

The terms *First* and *Second Quality* limestone are used both for the Upper and the Lower Coralline Limestone. Their water absorption after 24 hours immersion is 2 to 3 per cent of their bulk.⁴ Frequently both qualities are found in the same quarry. The *second-quality* often occurs above the *first* but sometimes it is intermixed with the *first*. The *first-quality* is brownish yellow to white in colour. Table 2 gives the properties of the first- and second-quality limestone as stated by Colson.

Table 2 : Properties of *First- and Second-Quality* building stone

	<i>First-Quality</i>	<i>Second-Quality</i>
<i>Geology:</i>	crystallization has taken place.	stone is in its original condition.
<i>Properties :</i>	hard; crystalline; non-porous; weathers very well; easily worked; split straight and smooth; some take polish.	softer than first quality; grains of various sizes; porous; weathers well but not as good as first quality; easily worked.

3. Ellul, M., 'Weathering and Deterioration of Malta Limestone-Causes and Remedies', Paper read at the Second International Symposium on the deterioration of building stones held at Athens; manuscript consulted.

4. Murray, J., 'The Maltese Islands with special reference to their geological structures,' *The Scottish Geographical Magazine*, vol. 6 (1890), 449-88.

Colson further distinguished between five varieties of first quality limestone. Table 3 is based on his notes on the various types of this limestone found in Malta. *First-quality* limestone was formerly used for kerbstones, doorsills, stairs, milestones, and monuments. Nowadays they are used as spalls in road construction and as fine and coarse aggregate in the production of concrete and road surfacing. The hard compact variety is still sometimes used as a dimension stone in important buildings and monuments. The soft limestone division within the Upper Coralline formation has been extensively quarried for the manufacture of lime (locally : *gir*).

The word 'marble' traditionally applied to varieties of the Upper and Lower Coralline Limestone is a misnomer. They are not metamorphic in origin. They are first-quality limestone which take polish. Hyde ⁵ limits polishable first-quality limestone to the Upper Coralline formation.

Third- and Second-Class Third-quality limestone

These limestone are present in the lowest beds of the Globigerina formation. They are soft, easily quarried, and hewn into any shape. The water absorption of Globigerina limestone after 24 and 72 hours is about 25 per cent ⁶ and 31 per cent ⁷ respectively.

Table 3 : Types of *First-Quality* limestone found in Malta

Type	Locality	Diagnostic properties
1	Madliena	colour : light brown; fine-grained; crystalline; clean bright fracture; hard; durable; rings clearly.
2	Madliena	same as type 1 but with larger grains.
3	Madliena	colour : white; no apparent grains; spots and patches of softer stone intermixed; hard; brittle; durable; non-porous.
4	Maghlaq	colour : white; large-grained; hard; durable; somewhat porous; interstices not always filled up.
5	Maghlaq	same as type 4 except for closer grains; non-porous.

5. Hyde, H.P.T., *The Geology of the Maltese Islands* (Malta, 1955)

6. Murray.

7. Hyde.

The third-quality limestone is pale yellow in colour. It was formerly used for roofing slabs and for masonry construction. It is still extensively used as a dimension and ornamental stone. This limestone quality weathers well, becoming harder and light reddish-brown in colour. On weathering, it frequently exhibits honeycomb weathering. A tradition of making sculptures and carvings out of this limestone exists. In Gozo there is actually a small industry concerned with the manufacture of such objects of art.

Second class third-quality limestone is inferior to the third quality limestone. It does not stand exposure and it is used for foundations and in other situations protected from the air. Opinions of stonemasons and quarrymen about what constitutes *soll* differs widely.⁸ Frequently it occurs as a bed within the formation and sometimes as blue-coloured patches.

Heat-resistant limestone

Rizzo⁹ differentiated between two beds within bed 1 of the Globigerina formation (Table 5). The lower one is heat resistant and hence it was quarried to build ovens and to manufacture small stone stoves (*kwiener*). The best quality of this variety was quarried at Tal-Img'ajjen in the limits of Xewkija, at Ta' Óamet and in other areas.¹⁰

Clay

The Blue Clay formation is made of fine particles rich in alumina and water. It has poor cohesion and when mixed with water it makes a thick sticky paste. It can be grey, blue, yellow, or brown in colour. The Clay is responsible for the upper water table and natural springs of the Islands.

The Blue Clay is not used for building purposes. When blended with sand, it was used in the manufacture of local pottery. The civil engineering properties of the Blue Clay were known to the Knights of St John. In the seventeenth century they constructed masonry aqueducts to transfer by gravity water collected from this layer to Valletta, a distance of approximately 13 kilometres. Although of low cohesive properties, the clay was sometimes used as puddle for dams. Other proposed uses of the Clay included the manufacture of alumina and fertilizer. Abstracting aluminium from the high alumina content was thought to be a potential industrial application of the Clay.¹¹ Such an application is not feasible because the workable quantities are limited and the composition is not stable.¹² Cooke suggested that the crystalline masses of selenite (gypsum) or sulphate of lime present could be utilized as a fertilizer.

8. Dr. A. Torpiano, personal communication.

9. Rizzo, C., *Report on the Geology of the Maltese Islands* (Malta, 1932).

10. Hyde

11. Rizzo.

12. Hyde.

Glauconite deposits

Glauconite deposits make the entire Greensand formation. It is made up of sand like glauconite grains cemented by silica, lime, clay, and oxides of iron. It is highly porous and since it is overlying the clay, it forms a natural underground reservoir for the surface water percolating from the surface, joints and fissures of the Upper Coralline formation.¹³

The Greensand has no practical use in the building industry. Although a sand of low grade can be obtained, it is not suitable for mortar or concrete making. Also, recovery of such sands is very expensive because outcrops are not easily accessible.

Phosphorite

Phosphorite beds have been developed within the Globigerina formation. The thickness of these beds varies from a few centimetres to over a metre. Spratt,¹⁴ Cooke,¹⁵ and Rizzo¹⁶ agree that these nodules enhance the fertility of local soil. All authors had therefore suggested the exploitation of these beds for local use as a fertilizer. Spratt¹⁷ and Cooke¹⁸ had also suggested the exploitation of these beds on a commercial scale. Although deposits are of inferior quality, the latter suggested the Italian market as a potential export destination. Rizzo¹⁹ gave a number of reasons why this proposition was not feasible.

To contemporary standards, commercial low grade phosphorite-bearing strata are present in Gozo. About 1492.5 cubic metres of such strata are contained within the Xlendi and Qawra subsidence structure.²⁰ When weighted against the environmental implications involved with an extractive operation, these deposits are not worth exploiting.

Tables 4, 5, 6, and 7 are based on Colson's remarks on the Lower Coralline, Globigerina, Greensand, and Upper Coralline Formations respectively.²¹

13. Ibid.

14. Spratt, T.A.b. and Forbe E., 'On the Geology of the Maltese Islands', *Proceedings of the Geological Society*, vol 4. (1843), 225-9.

15. Cooke, J.H., Notes on the Globigerina Limestone of the Maltese Islands, *Geological Magazine*, vol. 33 (1896), 502-11

16. Rizzo.

17. Spratt.

18. Cooke

19. Rizzo

20. Padley H.M. and S.M. Benett, 'Phosphorites, Hardgrounds, and Sundeositional Solution Deposition: A peleoenvironmental model from the Miocene of the Maltese Islands', *Sedimentary Geology*, vol 45, 1-34.

21. Murray.

Table 4 : Classification of the Lower Coralline Limestone

<i>Bed</i>	<i>Diagnostic properties</i>	<i>Uses</i>
3	very durable; crystalline; hard; non-porous; high crushing value; uniform in colour.	building stone.
2	nodule seam.	no use in building.
1	transition (Scutella) bed; soft; often mixed and merging into the calcareous sands of the overlying stratum; fine-grained; not durable; Echini project outwards when stone decays away.	not much used in building.

Table 5 : Classification of the Globigerina Limestone

<i>Bed</i>	<i>Diagnostic properties</i>	<i>Uses</i>
9 ₂	darker stone; does not withstand exposure.	foundations and other cases where protection from air is present.
9 ₁	pale yellow limestone but turns to light reddish brown colour after some time; composed of minute fossils; easily split into thin slabs; hardens when exposed to air; weathers very well; no fossils are present except for remains of saurians etc., and a few shells;	building stone; paving stone; thin slabs for roofing over beams; exported to Turkey and other countries of the Mediterranean.
8	thin layer of nodules (often missing).	no use for building purposes.
7	white, yellow fine-grained rock; building stone small nodules or chert (or hard substances resembling chert) scattered about in it.	building stone.
6	pale red, yellow or bluish rock; stands well when not exposed to the air; to the air; fossils are scarce.	foundations and rough walls or inside thick masses of buildings.
5	band of green nodules often partially embedded in the overlying layer - colour seems to be only on the surface.	not indicated.
4	nodule seam similar to bed 2 but thicker; contains plenty of sharks' teeth.	not indicated
3	thin layer of soft stone containing small nodules of selenite, manganese, etc.	not indicated.
2	top nodule seam; consists of conglomerate of shells, casts of shells in a peculiar dark brown polished material, corals, etc., in a brown matrix which varies from soft to hard.	no use in building.
1	dark bluish grey when freshly cut; rapidly dries to pale grey when exposed; quite soft; weathers badly; scaling off in successive flakes when exposed to weather.	used in roughest kinds of building.

Notation 9₁ and 9₂ was used to differentiate between varieties of the same bed. Owing to the presence of chert nodules in bed 7, this bed is harder and more difficult to work than bed 9. The cost of working this bed was one-third more expensive than bed 9.

Applying Rizzo's classification.²² the Lower Globigerina limestone corresponds to bed 9 while the Middle and Upper Globigerina limestone corresponds to beds 5 to 7 and 1 to 3 respectively.

Table 6 : Classification of the Greensand Formation

<i>Bed</i>	<i>Diagnostic properties</i>	<i>Uses</i>
3 ₂	same materials as bed 31 but harder; vast amounts of large flat used in rough sea urchins; weathers badly - harder fossils in high relief.	no use in building; work.
3 ₁	yellowish colour; contains more clay than bed 2; recently more compact and harder than bed 2; contains black grains from the bed above.	no use in building.
2	black and yellow sands with red patches in some places; breaks up building stone; easily; contains a lot of clay and calcareous matter.	not suitable for not suitable for mortar except when washed (economically unfeasible).
1	sandy rock hardened at the top; hard to soft; white and yellow not red contains black grains.	not indicated.

Notation 3₁ and 3₂ was used to differentiate between varieties of the same bed. Bed 3₂ has been used in Fort Chambray and the perimeter walls of the old cemetery.

Table 7 : Classification of the Upper Coralline Limestone

<i>Bed</i>	<i>Diagnostic properties</i>	<i>Uses</i>
3 ₂	hard and close texture; crystalline structure; semi-translucent in appearance; few cavities; casts of small shells harder than those present in beds 1 and 2; durable and weathers well; hard and close texture.	building stone.
3 ₁	soft; full of cavities and fissures containing soft white powders; weathers very badly.	not indicated.
2	identical in composition to bed 1; differs from bed 1 in that casts are smaller and the cementing material is granular in appearance.	building stone.
1	very loose in structure; very porous; easily broken; weathers into holes very easily.	rubble wall construction; not suitable as building stone.

Notation 3₁ and 3₂ was used to differentiate between varieties of the same bed.

QUARRYING

Two types of quarries are present in Malta : hardstone and softstone. Hardstone quarries work the first and second class quality limestone while the softstone quarries work the third- and second-class third-quality limestone. Limestone from both quarry types is extracted by open-pit methods.

Hardstone quarries are worked by drilling and blasting throughout the depth of the quarry. The material is then crushed, ground, and screened. Large blocks are lifted from the quarry by cranes and transported to factories working this limestone as dimension stone. New systems for hardstone quarrying using hydraulic hammers are being introduced.²³

Limestone from the softstone quarries is obtained by sawing blocks with tungsten carbide tipped circular saws directly from the rock bed in the sizes used for building. These saws generate a lot of fine dust. By controlling this dust both the health of the quarrymen and the environment will benefit. Some of this fine dust is used in making mortar. It may be possible to sell this fine dust for non-construction purposes.

In 1990 there were 70 softstone and 26 hardstone licensed quarries.²⁴ The variation in number of hardstone and softstone quarries for 1970-1986 is given in Figure 2. Volume extracted over the same period is given in Figure 3. Both figures are based on data published in the Malta Structure Plan Technical Report No. 5.3 (1991).

23. New Systems for Hard Stone Quarrying, *The Architect*, April 1993.

24. *Malta Structure Plan Technical Report* No. 5.3: Report of Survey : Quarries (Malta, 1991)

ENVIRONMENTALLY-FRIENDLY SOURCES OF ENERGY

Vanessa Grima Baldacchino

One of the components of today's world that distinguishes our life from the life our forefathers led is definitely the improvements that have been made in our way of life. These improvements have been made thanks to the use of energy which plays an essential role in the everyday life of citizens, heating their houses, and supplying power for most domestic services and appliances.

Energy is also an essential factor input to economic activity, such as in the fields of agriculture, services, industry and transport. Energy is a major raw material traded worldwide, playing an important economic and political role in the world context.

The location of these major energy resources, such as oil, gas, and coalfields, relative to the large consuming countries, gives rise to complex relationships between producers and consumers. The burning of these resources has negative repercussions on the environment, causing global warming and the greenhouse effect. This is the result of the depletion of the ozone layer. The solution to this problem is to have sustainable development.

What is sustainable development? In essence this means meeting the needs of the present generation without compromising the ability of future generation without compromising the ability of future generations to meet their needs, and meeting human needs implies recognizing each person's right to a standard of living adequate for health and well-being, including adequate access to energy supplies.

If we are to work towards having a sustainable future we must oblige all countries to accept to implement an energy strategy which does not jeopardize the development potential of developing countries. This could have various implications, such as the possibility that high-energy consuming countries might have to reduce their *per capita* consumption of energy, in particular fossil-fuel energy. The demand for energy is constantly on the increase and social and economic developments are expected to lead the demand for this energy to double every fifteen years. Over the next fifteen or twenty years the major factors involved will not be so much the actual availability of energy as the economic and political conditions under which it is obtained. The underlying problem regarding energy policy is to guarantee long-term security of supplies under satisfactory economic conditions. It is important, however, that

the aim of insuring adequate supplies of energy has to be reconciled with the demands of environmental protection. Both the emerging global ecological problems as well as the potential of non-renewable and renewable primary-energy sources must be taken into account when considering the overall issue of how to meet the future energy needs of a growing global population.

Besides a rational use of energy, enormous investment is necessary to find new sources of energy that will gradually replace fossil-fuel energy. The trends in energy requirement and consumption over these last twenty years may be attributed to three major factors: the price of energy and especially of oil; economic growth, including technical and structural changes in economies; as well as the energy policies pursued, in particular those aimed at energy conservation. The rate of growth of world energy demand together with the increase of global environmental concern has helped for the issue of energy to be considered in the long-term perspective. The question asked is to see how to protect the environment without giving up economic development, and this requires abundant and reasonably priced sources of energy. The future lies in finding new and renewable sources of energy, in finding ways of how to control and possibly reduce energy consumed, and, most of all, these energy sources must be environmentally friendly.

SOME BASIC STRUCTURES IN LITERATURE

David Clarke

Not all novels or plays begin at the beginning and go on to the end. In crime fiction, for example, if a thriller begins with the sentence *Mrs. Blenkinsopp screamed loudly and long, on discovering Sir William slumped over his desk with a neat bullet hole in the back of his head*, probably the entire book will be geared to finding out who did the murder. The murder is the main event of the story, but it has already taken place before the book started. Many stories, in fact, start somewhere in the middle.

Again, it is not unusual for a story to begin at the end, or very near to the end, and for the author then to use a flashback technique, by means of which he narrates and describes the events that have led up to the point where he began his tale. This is a technique which has often been used to good effect in the cinema.

An elementary study of the structure of plays shows that dramatists often locate a sequence of scenes in different places with different characters. In *Macbeth*, for example, the play opens with the Witches. In the next scene King Duncan and his retinue come on and go off. In Scene III the Witches re-enter to meet, a little later, Macbeth and Banquo. The start of Scene IV has Duncan & Co. again, then adds Macbeth and Banquo. Scene V begins with Lady Macbeth, alone. And so on.

These structural patterns are not random and arbitrary. They serve artistic purposes by creating variety, dramatic interest, suspense. Instead of being in dully predictable sequence, where A leads to B, which leads to C, which inevitably leads to D and E, which in turn lead to F and then G - instead of this, varied patterns of structure mean that events now contain an element of surprise, and, even more important, events and their causes become interwoven. E.M. Forster had this to say about it:

Let us define a plot. We have defined a story as a narrative of events arranged in their time-sequence. A plot is also a narrative of events, the emphasis falling on causality. *The king died and then the queen died* is a story. *The king died, and then the queen died of grief* is a plot. The time-sequence is preserved, but the sense of causality overshadows it. Or again: *The queen died, no one knew why, until it was discovered that it was through grief at the death of the king*. This is a plot with a mystery in it, a form capable of high development. It suspends the time-sequence, it moves as far away from the story as its limitations will allow. Consider the death of the queen. If it is in a story we say 'and then?' If it is in a plot we ask 'why?' That is the fundamental difference between these two aspects of the novel.

From *Aspects of the Novel* by E M Forster

Foster's words are worth remembering by anyone who has ambitions to take his or her own writing to a level higher than straightforward narrative governed by strict chronological order.

The use of a narrator in a play or novel is one method of giving the work a planned, structured form. Using a narrator enables a writer to link together diverse events and scenes like threading coloured beads on a string.

The following example was written as a play for radio and is subtitled *A Play for Voices*. It makes use of two narrators, the First Voice and the Second Voice.

FIRST VOICE:	The sunny slow lulling afternoon yawns and moons through the dozy town. The sea lolls, laps and idles in, with fishes sleeping in its lap. The meadows still as Sunday, the shut-eye tasselled bulls, the goat-and-daisy dangles, nap happy and lazy. The dumb duck-ponds snooze. Pigs grunt in a wet wallow-bath, and smile as they snort and dream. They mud-bask and snout in the pig-loving sun; their tails curl; they rollick and slobber and snore to deep, smug, after-swill sleep. Donkeys angelically drowse on Donkey down.
MRS. PUGH:	Persons with manners,
SECOND VOICE:	snaps Mrs. cold Pugh,
MRS. PUGH:	do not nod at table.
FIRST VOICE:	Mr. Pugh cringes awake. He puts on a soft-soaping smile: it is sad and grey under his nicotine-egg yellow weeping walrus Victorian moustache worn thick and long in memory of Doctor Crippen.
MRS. PUGH:	You should wait until you retire to your sty,
SECOND VOICE:	Says Mrs. Pugh, sweet as a razor. His fawning measly quarter-smile freezes. Sly and silent, he foxes into his chemist's den and there, in a hiss and prussic circle of cauldrons and phials brimful with pox and the Black Death, cooks up a fricassee of deadly nightshade, nicotine, hot frog, cyanide and bat-spit for his needling stalactite hag and badinage of a pokerbacked nutcracker wife.
MR. PUGH:	I beg your pardon, my dear,
SECOND VOICE:	he murmurs with a wheedle.
FIRST VOICE:	Captain Cat, at his window thrown wide to the sun and the clippered seas he sailed long ago when his eyes were blue and bright, slumbers and voyages...

From *Under Milk Wood* by Dylan Thomas (slightly adapted)

The first Voice sets the scene and, later, tells us something about Mr. Pugh's physical appearance, since we, the listeners, cannot see him for ourselves. Mrs. Pugh has been heard earlier in the play, so her voice is likely to be recognized at once. But the Second Voice helps us by confirming that she is speaking, and adds an apt verb and adjective to describe her aggressive personality. The Second Voice also describes Mr. Pugh's violent inner reactions to his wife's nagging.

Notice the clean break between *Donkeys angelically drowse on Donkeys Down* and the sharply critical tone of Mrs. Pugh's first three words. The structure here is one of juxtaposition. Mrs. Pugh's remark is set by the side of

the First Voice's pleasing description of nature *without any linking comment*, so that the contrast between the two is all the more dramatic. And the scene has been changed, with great skill. By implication, Mrs. Pughs' first sentence tells us in an instant that we have moved from the fields and open air into the Pugh's dining-room. Then, at the end of the extract, we see another method of structuring: the First Voice changes the scene by telling us *directly* that we have left and Mr. and Mrs. Pugh and have joined Captain Cat at his window.

The employment of these narrators gives the writer great flexibility, allowing him to move easily from one scene to the next and from one group of characters to another. The narrators describe and comment on the action and provide us with necessary information. They set scenes, link together the various elements of the play, and thus give it a simple, structured unity.

Sometimes a story is narrated in the first person, with I being the writer himself or one of his characters, as in *David Copperfield* by Charles Dickens. Sometimes several characters share the telling of a story, or relate aspects of it from different points of view, as in Lawrence Durrell's *Alexandria Quartet*, where the narrator of *Justine* and *Balthazar* becomes a character in *Mountolive*. In Robert Bolt's drama, *A Man for All Seasons*, his narrator, known as the Common Man, actually plays several minor parts, rather than merely relating the plot, and in this way helps to steer the course of the action.

Obviously, a narrator is not always needed. Much writing is reflective or evocative or philosophical in intention and doesn't have a story or a plot. In such cases structural patterns are often created by the words themselves, by how and where they are placed, by their music and imagery. This is especially true of poetry, as, for example, in 'The Divine Image' by William Blake:

To Mercy Pity Peace and Love,
All pray in their distress:
And to these virtues of delight
Return their thankfulness.

For Mercy Pity Peace and Love,
Is God our father dear:
And Mercy Pity Peace and Love,
Is Man his child and care.

For Mercy has a human heart
Pity, a human face:
And Love, the human form divine,
And Peace, the human dress.

Then every man of every clime,
Then prays in his distress,
Prays to the human form divine
Love Mercy Pity Peace.

And all must love the human form,
In heathen, Turk or Jew.
Where Mercy, Love and Pity dwell,
There God is dwelling too.

This poem deals with one of Blake's most deeply felt themes: that mercy, pity, peace, and love are attributes both human and divine, and that God dwells in people who display these qualities.

Apart from the development of the poem's theme, its structure is shown in the steady beat of its rhythm, in its division into four-line stanzas, and in the varied repetition of its key words. These are the things which give the poem its coherent shape and at the same time bind its separate parts together.

Finally, the briefest comparison between the structure of a novel by Jane Austen and one by Thomas Hardy will reveal a basic difference in technique. Jane Austen's novels are structured around social events - dinners and dances, visits, marriages. Hardy deals with momentous affairs - the power of Nature, love which leads to ruin, characters ranged against impersonal forces which shape man's fate. We are always aware in reading Hardy that the author is in control of everything. Jane Austen, too, is always in control of her novels' shape and structure, but in reading *Emma*, for example, we find most events are seen through the heroine's eyes and we are never conscious of the structural impositions that occur in a novel such as *Two on a Tower*. Dynamic growth surely involves a greater complexity and greater skill on the part of the writer than objective authorial structuring.

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DAVID CLARKE is the author of *The Language of Literature*.

RABTA BEJN IL-METAFORA U FOROM OHRAJN TA' TAHDIT FIGURATTIV

Josette Attard

Il-metaphora hija figura tat-tahdit li tqabbel kelma jew frazi ma' xi haġa li fil-verità tal-ħajja normali u skond il-logika ftit li xejn ikollha x'taqsam magħha. Ix-xebh mohbi li fiha l-metaphora jitfisser bis-saħħa ta' assoċjazzjoni. Izda l-metaphora hi differenti mit-tixbiha għax filwaqt li din ta' l-aħħar tagħmel użu minn kliem *bħal*, *qisu*, *daqs*, u thalli jidher il-paragun, fil-metaphora, għalkemm hemm xebh dirett, il-paragun hu mohbi u ma jsirx użu mill-kliem li semmejt. *Niżel bħall-vleġġa, iebes daqs iż-żonqor*, m'humie x metaphori izda huma tixbihat.

Fir-*Retorika* Aristotli qal li d-differenza bejn it-tixbiha u l-metaphora hi żgħira għax nistgħu nġhidu li t-tixbiha hi metaphora bi spjegazzjoni miftuħa tar-rapport bejn żewġ oġġetti. Fit-tixbiha nġhidu li A qisu B, filwaqt li fil-metaphora nġhidu A hija B. G.Esnault kiteb dwar id-differenza bejn dawn iż-żewġ figuri tat-tahdit l-aktar minhabba l-intensità u l-qawwa espressiva li jinsabu fil-metaphora. Id-definizzjoni tiegħu ta' metaphora hi ta' paragun ikkondensat li bis-saħħa tiegħu l-mohħ jafferma identità intuwittiva u konkreta.

L-istess idea jfissirha S. Ullmann fi *Stil u Lingwaġġ* meta qal li d-differenza bejn tixbiha u metaphora tinsab bejn xbihat espliciti u xbihat impliciti jiġifieri bejn xbihat li jagħmlu analogija (tixbiha) u xbihat li jidentifikaw haġa ma' ohra (metaphora). Ullmann ikompli jgħid li hi haġa hafifa li tidistingwi bejn dawn iż-żewġ tipi. Il-parti delikata hi meta tiġi biex tiddeċiedi kif il-kritiku jehodhom in konsiderazzjoni. Minhabba din id-differenza fl-intensità ċerti awturi jippreferu jużaw il-wahda mill-ohra. Il-kittieb Franciz Jean Giono ipprefera juża t-tixbiha minhabba li hi aktar ċara filwaqt li ohrajn bħal Mallarme jippreferu l-metaphora għax fi kliem Mallarme stess huwa jwarrab il-kelma kif tidher fid-dizzjunarju. V. Hugo wkoll mexxa fuq din l-idea. Mill-banda l-ohra minhabba li l-metaphora u t-tixbiha jgħinu lil xulxin, xi poeti jinqdew bit-tnejn billi qegħduhom wahda hdejn l-ohra, jew billi iħallu lil wahda thaddem lill-ohra. Il-metaphora tissikka t-tixbiha ta' go fiha u għalhekk l-analogija toħroġ b'tali mod li l-*Ground* jew il-*Lewn* ma jidhirx miktub.

Il-*mitonimija* u *sineddoke* johorgu wkoll mill-bini tal-metaphora. J.R. Searle jgħid li l-metaphora ssehh meta l-kittieb jgħid 'S hi P' u jrid ifisser 'S hi R'. Għalhekk P u R jista' jkollhom rapport bejniethom ta' parti li qieghda tirrappreżenta xi haġa shiha jew ta' reċipjent u dak ta' go fih, jew ta' effett flok il-kawża, jew ta' żmien minflok in-nies li kienu jgħixu fih u wkoll ta'

ilbies u dak li jilbsu; dan kollu nistghu nigbruh fil-figura tat-tahdit li tissejjah *mitonimija*. Ghalhekk il-mitonimja hi forma ta' metafora wkoll. F'kull każ li semmejt il-kontenut semantiku ta' P iwassal il-kontenut semantiku ta' R b'xi prinċipju ta' assoċjazzjoni. L-istess haġa nistghu nghidu ghas-sineddoke. It-tnejn huma 'każi speċjali' kif isejhlhom Searle 'tal-metafora'. Meta xi hadd ikun qieghed jtkellem fuq 'il-kuruna', is-semmiegh irid jifhem li qieghed jirreferi ghar-regina. F'din il-mitonimija l-*vehicle* jew il-*mera* biss hi pprezentata. Jekk niehdu l-vers ta' Dun Karm:

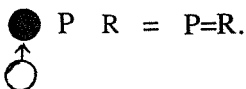
Ghaddew sitta u ħamsin xtiewi minn fuqi

naraw li l-partijiet tas-sena (xtiewi) qeghdin flok snin shaħ. Bis-saħħa tas-sineddoke l-istaġun qalil irid ifisser sena ta' tbatija.

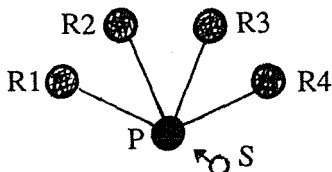
Fil-każ ta' l-*ironija* t-tifsira tal-kelliem u t-tifsira tas-sentenza huma differenti, anzi huma l-kontra ta' xulxin. Liema huma l-prinċipji li jghinu lis-semmiegh jifhem il-kontra ta' dak li sema'? Għall-ironija, bħall-metafora, tghid haġa meta trid tfisser ohra. Il-mekkaniżmu li bih taħdem l-ironija huwa li t-tlissina (Searle isejhlha '*utterance*') jekk tittiehed litteralment, tinhass barra minn postha fis-sitwazzjoni li tinghad. B'hekk din is-sitwazzjoni, minhabba li tkun ovvja, iġġieghel lis-semmiegh jerga' jinterpreta t-tlissina b'mod u manjiera li ma tibqax tinhass barra minn postha iżda ssir addattata għas-sitwazzjoni u bl-akbar mod naturali hu jinterpretaha l-kontra tal-forma litterali. Jekk niehdu sitwazzjoni sempliċi fejn tinghad tlissina ironika, malajr naraw dan il-kunċett ta' ri-interpretazzjoni. Nagħmlu mod li tifel għadu kif kisser vażun iqum il-flus u ommu tghidlu: 'Prosit, x'biċċa xogħol għamilt!' Hawnhekk, bħal fil-metafora, it-tifsira tal-kelliem hi differenti mit-tifsira tas-sentenza. Għalhekk il-kelliem jgħaddi mill-proċess li semmejt hawn fuq. Bħall-metafora, l-ironija m'għandha bżonn l-ebda konvinzjonijiet extra-lingwistiċi jew ohrajn. Biżżejjed il-prinċipji tat-tahdit u r-regoli ġenerali tiegħu.

Teżisti differenza wkoll bejn l-ironija u l-metafora fuq naha, u l-atti tat-tahdit indirett fuq in-naha l-ohra. Jekk waqt l-ikel ngħidlek: 'Tista' tghaddili l-melħ?' inti tifhimha li hi mistoqsija dwar hiltek biex tagħmel azzjoni. Fil-fatt inti tifhimha bħallikieku għedtlek: 'Għaddili l-melħ jekk jogħġbok' u għalhekk tghaddili l-melħ. Fl-atti tat-tahdit indirett il-kelliem ifisser dak li jghid, iżda barra dan ifisser ukoll affarijiet ohra. It-tifsira tas-sentenza hija biss parti mit-tifsira tat-tlissina. Il-mekkaniżmu ta' dan jaħdem hekk: l-ewwel is-semmiegh irid jintebah li t-tlissina hija att tat-tahdit indirett billi fil-kuntest il-mistoqsija dwar is-semmiegh tinhass li hija barra mill-konversazzjoni ta' dak il-hin. Għalhekk is-semmiegh jara li hemm bżonn ta' tifsira alternattiva. Imbagħad billi s-semmiegh jaf ir-regoli tat-tahdit, jaf li l-hila biex jgħaddi l-melħ hija kundizzjoni preparatorja għall-att tat-tahdit li jmiss wara. Għalhekk jaasal għall-konkluzjoni li l-mistoqsija dwar hiltu hija talba bil-pulit biex jagħmel l-azzjoni.

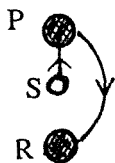
Searle ifisser id-differenza bejn dawn il-figuri tat-tahdit permezz ta' tpingija. Fit-tlissina *litterali* ma hemmx differenza bejn it-tifsir tas-sentenza u dak tat-tlissina



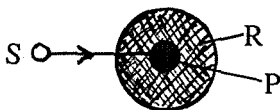
Fit-tlissina *metaforika*, it-tifsira metaforika naslu ghalha billi qabel ngħaddu minn dik *litterali*. Hawnhekk il-kelliem jista' jasal għal numru indefinit ta' tifsir jew għal tifsira waħda biss



$P = R1$ jew $R2$ jew $R3$ jew $R4$. Fit-tlissina *ironika* l-kelliem ifisser il-kontra ta' dak li qiegħed jgħid. Għalhekk is-semmiegħ biex jasal għat-tifsira tat-tlissina jrid jgħaddi mit-tifsira tas-sentenza biex b'hekk ikun jista' jmur lura għall-kontra tagħha.



$R = \text{il-kontra ta' } P$. Fl-aħharnett il-kelliem ta' att tat-tahdit indirett ifisser dak li jgħid flimkien ma' xi haġa oħra.



P inkluża f' R iżda $P=R$. Għalhekk it-tifsira tat-tlissina għalkemm tinkludi t-tifsira tas-sentenza toħroġ 'il barra minnha.

Il-qawwa espressiva li tinsab fil-metafori tajbin, mela, ġejja minn żewġ fatturi: 1) is-semmiegħ irid jintebah b'dak li jrid ifisser il-kelliem u 2) jrid jagħmel dan billi jmur fuq kontenut semantiku iehor minn dak li huwa kkomunikat. Hekk ried ifisser Dr Johnson meta qal li l-metafora tesprimi żewġ ideat f'waħda. Din il-qawwa espressiva tinsab fil-fatt li l-binja tal-metafora u t-tlaqqigh flimkien ta' ċertu kliem u espressjonijiet m'humix komuni u għalhekk imorru kontra d-drawwiet mentali tagħna għax minflok nittrađu l-esperjenza astratta f'termini konkreti kif soltu naghmlu, naħdmu l-oppożt u l-oġġetti konkreti ma nhalluhomx materjali u ngibuhom jixbhu fenomeni astratti.

THE NIGGER OF THE NARCISSUS:

A TALE OF THE SEA

Gilbert Phelps

The *Nigger of the Narcissus* has an unfortunate title, but it must be borne in mind that the term 'nigger' was not such an emotive one at the time Conrad was writing, and that he was using it descriptively and symbolically, and not insultingly. If that obstacle can be surmounted, the novel can be seen not only as an exciting tale of the sea, but also as a significant new portent in the history of English fiction, and as crucial in Conrad's own development.

Joseph Conrad was born Teodor Jósef Konrad Nalecz Korzeniowski, in 1857, at Berdyczew in south-eastern Poland - the most landlocked region in the whole of Europe. His parents belonged to the Polish landowning aristocracy, but when Jósef was three years old his father was arrested for conspiring against the Russian authorities (who at that time ruled Poland), and the family were exiled to a remote town in Northern Russia. His mother died there in 1865, and though his father was released two years later, his health was affected and he died in Cracow in 1869, leaving the orphaned Jósef in the care of an uncle. After attending school in Cracow, he astonished his guardian by announcing his determination to go to sea, fired by the novels of Captain Marryat which he had read in translation. Like most Poles of his class he spoke fluent French, so in 1874, when he was nearly seventeen, he went to Marseilles, where he saw the sea for the first time in his life and joined the crew of a French sailing vessel. After several voyages, mostly in the Carribbean, he and three other young men formed a syndicate, purchased a small sailing vessel and engaged in gun-running to the Carlist rebels in Spain.

The collapse of the gun-running enterprise, which left him badly in debt, decided Conrad to join the crew of a British merchantman lying in Marseilles, though he still, at the age of twenty, knew no more than a few words of English. The ship eventually took him to Lowestoft where he set foot on English soil for the first time and began teaching himself English by studying a local newspaper. He progressed so well that two years later, after several coastal trips and a voyage in a wool-clipper sailing to Australia, he passed the first of the officers' examinations of the British Merchant Service.

During the next six years he made a number of voyages as third, and later second, mate, mostly to the China Seas, the Indian Ocean and the Malay Archipelago. On one of these there was a negro member of the crew named

James Wait - the name of the central character of *The Nigger of the Narcissus* - while the ship in which, in 1884, Conrad sailed as second mate from Bombay to Dunkirk, was actually named the *Narcissus*.

In 1886, Conrad became a naturalized British subject, and in the same year he obtained his Master's ticket. From then on he held a number of commands, one of them of a river steamer in the Belgian Congo. He picked up a tropical fever there which permanently affected his health, but which also seems to have had the effect of turning him to writing. During the next five years he worked during his off-duty hours on his first novel, *Almayer's Folly*, which is about a feckless Dutch planter in Indonesia who marries a native girl and whose grandiose visions end in opium addiction and eventual death. Conrad's last voyage, in 1893, was as captain of the *Torrens*, a famous sailing vessel of the day. John Galsworthy, later author of *The Forsyte Saga*, was a passenger for part of the voyage and reported that Conrad still spoke 'with a strong foreign accent'. But when *Almayer's Folly* was eventually published in 1895 it was clear that this man, who had not even begun to learn English till he was twenty-three, might one day become a master of English prose.

Unable to go to sea again because of his health, Conrad married an Englishwoman and settled down to earn his living as a writer. His second novel, *An Outcast of the Island* which, like its predecessor, is about the degeneration of a white man in the tropics (this time Borneo), was published in 1896. With the publication of *The Nigger of the Narcissus* in 1897, Conrad's apprenticeship was over and he was firmly set on the path which would lead to *Nostromo* (1904) which some critics regard as the greatest novel of the twentieth century.

As F. R. Leavis has said, Conrad's genius was a unique and happy union of seaman and writer', and one of the reasons for the leap forward in *The Nigger of the Narcissus* was that it was the first of Conrad's novels to deal with the world he knew so well from the inside - the small enclosed world of a ship at sea.

Summary

The plot itself (which is narrated in the first person) is of the slightest. The crew of the sailing ship *Narcissus*, berthed in Bombay, come aboard. Many of them are based on the crew members of the ship of the same name on which Conrad had sailed. The chief mate, Mr Baker, musters the hands. At the last moment, the negro seaman James Wait comes aboard, announcing that he had been taken on by the captain that morning. He is 'calm, cool, towering, superb'; but he has a cough 'metallic and explosive, like a gong', and not long after the

Narcissus has put to sea, he declares that he is dying - and proceeds to exploit to the full the awe and pity that his announcement arouses. He is excused duty and the crew wait on him: 'with rage and humility, as though we had been the base courtiers of a hated prince; and he rewarded us by his unconciliating criticism.' He tyrannizes over the crew to such an extent that the Chief Mate reports to the Captain that he is a threat to discipline, but the Captain, himself coming under the strange spell of James Wait's ominous 'accomplice' (that is, Death) orders the construction of a sick-bay for him in the deck-house.

Two members of the crew alone are exempt from James Wait's capricious tyranny: the squalid Donkin, who accuses him of malingering, alternately insulting and scrounging from him, and yet paradoxically winning his favour; and old Singleton, who 'with venerable mildness', tells him: '... get on with your dying ... don't raise a blamed fuss with us over that job. We can't help you.'

Off the Cape of Good Hope the *Narcissus* is struck by a gale. She is hurled on to the side and in imminent danger of turning turtle. At great risk to themselves, a number of the crew manage to rescue James Wait, who as usual rewards them with complaints. Eventually, the ship rights herself, and Singleton, after thirty hours at the wheel, collapses and for the first time faces the truth that he is growing old. Gradually, the horrors of the tempest recede into the background and Wait's dying again becomes the dominating preoccupation. As he feels himself growing weaker and terrified by the hellfire sermonizing of the cook, who is subject to spells of religious fervour, Wait insists that Donkin was right in his accusation of malingering and announces that he is going to get up and return to duty. When the Captain orders him to remain in his cabin, there is nearly a mutiny, led by the troublemaker Donkin.

The unrest among the crew is heightened by the fact that the ship is now held up by contrary head-winds. According to Singleton, who believes implicitly in the old seamen's superstition that 'mortally sick men ... linger till the first sight of land', these are caused by James Wait.

When the ship is at last in sight of the island of Flores (in the Azores) Wait does indeed die and Donkin ransacks his belongings. Although the crew have been expecting his death, it comes as a shock: 'A common bond was gone; the strong, effective and respectable bond of a sentimental lie.' But as soon as Wait's body has been consigned to the deeps, a favourable wind springs up, much to the satisfaction of old Singleton who feels the old superstitions have been thoroughly vindicated. A week later the *Narcissus* is in the English Channel, and before long she has docked in London and the crew have dispersed.

Critical commentary

An instructive approach to *The Nigger of the Narcissus* is by way of a contrast. In his Preface, Conrad makes a number of pronouncements like this:

'Fiction... must be, like painting, like music, like all art, the appeal of one temperament to all the other innumerable temperaments, whose subtle and resistless power endows passing events with their true meaning, and creates the moral, the emotional atmosphere of the place and time.'

This lofty profession of aim is a reminder that Conrad was a close friend of Henry James and his most considerable follower in the practice of the 'art of fiction'. Yet nothing could sound less like Henry James's world of subtle and refined characters moving in their refined ambience than, say, the exciting and action-packed description of the gale encountered by the *Narcissus* on her way home from Bombay. On this reckoning, the only thing James and Conrad would seem to have had in common is that they were both exiles from their native lands.

At one time, it was a critical commonplace to refer to Conrad as 'the Kipling of the seas'. Misled by this description, many readers were disappointed when they found that, in spite of the promise of the exciting and exotic settings, Conrad's novels were not anything like as full of incident as, for instance, Rudyard Kipling's *Plain Tales from the Hills* and *Soldiers Three*, which were published in 1888. The actual plot of *The Nigger of the Narcissus* could indeed be contained within the limits of the normal short story.

Although he made use of action, Conrad was not primarily an action-writer. He really was the disciple of Henry James in that he was a most careful stylist. A large section of *The Nigger of the Narcissus* is given over to the superb description of the storm, but there are equally vivid evocations of the sea in very different moods. However, Conrad's preoccupation with style in his descriptive passages led to faults as well as virtues, and particularly to what F. R. Leavis has called the 'disconcerting weakness or vice' of an over-elaboration of style and an 'adjectival insistence upon inexpressible and incomprehensible mystery', a weakness which marred several of Conrad's later novels, causing one wit to comment - after reading Conrad's novel, *The Rover* (1923) - that he had 'just been listening to a performance on the Conrad'.

It was this tendency towards portentousness that led E. M. Forster to complain of some of Conrad's later work that he always seemed to be 'promising to make some general philosophic statement about the universe, and then refraining with a gruff disclaimer' so that 'the secret casket of his genius contains a vapour rather than a jewel ... No creed, in fact. Only opinions ... held under the semblance of eternity, girt with the sea, crowned with stars, and therefore easily mistaken for a creed.'

One of the great merits of *The Nigger of the Narcissus*, however, is that it is on the whole free from purple passages and the mistiness attending them, and that Conrad's basic message emerges clearly and, for the most part, unambiguously. The finest passages of the novel are nearly always those in which the backgrounds are described not for their own sakes, but in connection with the human beings who belong to them. He is particularly vivid and concrete, moreover, when he is dealing with the day-to-day life of the ship.

The focus of Conrad's interest is not so much the sea as the men who sail upon it. In advising a young would-be novelist, he said: 'Try and make it a novel of *analysis* on the basis of some strong situation,' and Conrad is as much a 'novelist of fine consciences', a term he applied to Henry James, as James was himself. As John Holloway has pointed out:

'Conrad has, as his strongest link with James, his sense of life as a sustained struggle in moral terms; an issue between good and evil in the fullest sense of these words, which individual men find they cannot evade.'

The most subtle and serious of the moral challenges faced by the crew of the *Narcissus* is, of course, that represented by the dying negro. As his disease advances, he becomes not so much a human being as an embodiment of death and corruption - so that his blackness is in effect a symbol of the ultimate darkness. The rough kindness of James Wait's fellow-seamen, in consequence, gradually loses its positive and humane quality:

'Through him we were becoming highly humanized, tender, complex, excessively decadent: we understood the subtlety of his fear, sympathized with all his repulsions, shrinkings, evasions, delusions - as though we had been overcivilized, and rotten, and without any knowledge of the meaning of life.'

This sense of an unknown horror or evil residing in the human psyche was to become one of the outstanding features of Conrad's later work.

As a corollary to the creeping demoralization represented by the dying negro, is the subversive influence of the waster Donkin, whose 'picturesque and filthy loquacity flowed like a troubled stream from a poisoned source.' Whereas James Wait represents the corruption of death, Donkin represents the danger of corruptions with society, and it is significant that they are grudgingly attracted to each other. But the crew have another challenge to face - that of the storm - and as C. B. Cox has said, during that ordeal 'the ship becomes an archetype for human society on its journey through an inexplicable universe...' It is a universe as hostile and indifferent to man as that of Thomas Hardy.

In overcoming this challenge, the crew of the *Narcissus* achieve an heroic status which temporarily raises them above the corrupting influence of James Wait and Donkin. It is, however, a precarious triumph. Just as we are always

aware that the ship has only its planks to oppose to the powerful forces outside, so we feel that it is only the simple virtues possessed by the men who are her crew that stand between humanity and the horror and darkness beyond. The attraction for Conrad of the subject of a ship at sea with its enclosed, specialized society is that inevitably it strips away all inessentials. In *A Personal Record*, a book of reminiscences published in 1912, Conrad made this significant statement:

Those who read me know my conviction that the world, the temporal world, rests on a few very simple ideas: so simple that they must be as old as the hills. It rests, notably, among others, on the idea of Fidelity.

For Conrad 'Fidelity' is embodied above all in the courage, endurance, and sense of discipline that belong to the crew of a ship. *The Nigger of the Narcissus* is fundamentally a novel about fidelity, and the attempts of the elements, the dying negro, and Donkin to overthrow it. The real hero of the book is old Singleton, not only because of his incredible thirty hours at the wheel during the tempest, but also because he is the one man completely immune to the blandishments of James Wait and Donkin. And yet Singleton is a man, Conrad says, who 'in the last forty-five years had lived ... no more than forty months ashore', and for most of that time he was so drunk that he was seldom 'in a condition to distinguish daylight'. In other words, he is the least complicated of all the crew, essentially a grown-up child who can only function within the little world of a ship at sea. The more sensitive men succumb to the insidious temptations of the negro's long drawn-out dying: only Singleton rejects him.

As in Hardy's world, it is only the least sensitive characters who can be immune from tragedy. In this vision there is something which comes close to despair, for if humanity is sustained by men like Singleton (fine and heroic though he is) then the human civilization of centuries is fragile indeed. In addition, the fact that the small knot of discipline represented by the crew of the *Narcissus* can be undone by a James Wait or a Donkin, raises the possibility that that, too, is an illusion to which men cling in order to hide from an ultimately meaningless universe. It is this terrifying possibility which Conrad first raised in *The Nigger of the Narcissus* and which he was to explore with increasing honesty and tragic intensity in the great novels which followed.

SYSTEMS OF KNOWLEDGE SYLLABUS FOR 1996

1. Aims

Systems of Knowledge is an integral part of the Matriculation Certificate programme of studies. It is an interdisciplinary course aiming to:

- broaden the sixth-form curriculum;
- afford opportunities of going beyond the traditional limits of particular disciplines and gaining insight into different systems of knowledge;
- develop the candidate's ability to view ideas, skills, and situations from a wider standpoint than that of a single discipline;
- foster a greater flexibility in adapting to changing patterns of work and life in a post-industrial age.

2. Scheme of Assessment

The distribution of the marks shall be as follows:

Part I	-	30% of the global mark;
Part II	-	30% of the global mark;

The project on technology

and the quality of life - 30% of the global mark;

the moderator's assessment - 10% of the global mark.

The mark for work carried out by the candidates in Part I of the course programme is awarded by the schools but is subject to moderation by the MATSEC moderators.

2.1 School-based assessment

A maximum of 30% of the marks will be awarded for the candidate's performance across the study-units in Part I. The aggregate mark for these study-units must be the result of continuous assessment based on a minimum of five tests or assignments. The latter may take the form of essays, projects, practicals, etc.

In their assessments teachers should take into consideration the student's ability to:

- understand the disciplines, concepts, and methods applicable to the topics being studied;
- relate subjects to one another, to general knowledge, and living experience;
- analyse and evaluate a variety of types and evidence, making use of the concepts of cause and consequences, continuity and change, similarity and difference;
- use language clearly, consistently, and appropriately;
- understand the influence of Art and Science upon society;
- give evidence of appreciation of the strengths and the limitations of the various kinds of knowledge as well as their similarities and differences.

The mark awarded could be split into three components: clarity,

critical thought, and content.

A record drawn up by the class teacher, of each candidate's attendance and performance in this continuous assessment exercise (including a breakdown indicating how the total marks have been computed) is to be kept by the school for the purpose of moderation by the Markers' Panel. This record should be countersigned by the Head of School.

Candidates applying to sit their Final Examination are to submit to the Matsec Support Unit an official copy of their record on the appropriate form.

- 2.1.1 **Private candidates** will have to undergo a Formal Assessment covering the five study-units in Part I. It will consist of one three-hour paper carrying 30% of the marks, i.e. the same amount awarded by the schools in their continuous assessment.

This Part I Formal Assessment will be held once in May/June 1995.

There will be no supplementary session.

Notification to the Matsec Support Unit regarding the Formal Assessment will not be accepted unless accompanied by a school certificate stating that the candidate has completed Form V or its equivalent. For the purposes of the interpretation of this clause, it is here understood that a scholastic year ends in the second half of June.

- 2.1.2 Candidates failing the Final Examination are not obliged to repeat the first year of the course or the Part I Formal Assessment. They may opt to carry over to the next examination session the original mark or try to improve it by sitting/re-sitting the Part I Formal Assessment. The Part I and Final Examination cannot, however, be taken in the same session.

2.2 **Final Examination**

2.2.1 **Paper I (3 hours)**

There will be one 3-hour paper carrying 30% of the marks.

Candidates will be expected to answer four questions, one on each of the following items:

- (i) The Sea
- (ii) Energy
- (iii) Work and Leisure
- (iv) Good and Evil

Since Systems of Knowledge is essentially and interdisciplinary course, candidates will be expected to answer questions which link these four items to the modules covered in Part I.

3. **Programme outline**

3.1. **Part I**

In the first year candidates following the Systems of Knowledge course are expected to cover the following five study-units which will be school-assessed, subject to moderation by the Markers Panel. The aim is to improve the candidates ability to grasp, and experiment with, ideas and principles and not simply to memorise facts. Nonetheless real knowledge and preparation in the various areas is obviously essential.

For the exploration of all the five areas of study, guidelines rather than exact prescriptions, are provided.

(i) **Logic and Communication**

This unit affords students opportunities to exercise and develop their thinking skills helping them to master the guiding principles of discourse so that they learn to debate discuss and argue logically and form sound opinions. Teachers are encouraged to foster creative thought by organising practical sessions in which students try to solve problems together in order to learn, among other things, how the opinion of one speaker may yield a new truth when combined with that of another.

Thinking and communication are means for fitting the mind to derive knowledge in any branch of intellectual endeavour whether it is in the humanities, the commercial subjects, or science. They drill the mind into exactitude.

The making of a standard language, language and thought, language as a system of communication.

The specific character and potential of television and other audio-visual media should also be explored.

Recommended Reading

E. DeBono, *DeBono's Thinking Course*, Ariel, 1985.

R.J. Kreyche, *Logic for Undergraduates*, Holt Rinehart & Winston, 1970.

J. Nisbet & J. Shucksmith, *Learning Strategies*, Routledge Chapman and Hall, 1986.

Further Reading

P.T. Geach, *Reason and Argument*, Blackwell, 1977.

A. Borg, *Ilsienna: Studju Grammatiku*, Malta Has-Sajjied, 1988.

David Crystal, *The Cambridge Encyclopaedia of Language*, Cambridge University, 1987.

(ii) **The Natural and Social Environment**

This unit explores relationships between MAN and his physical/human environment. These relationships become particularly relevant in the study of spatial patterns involving phenomena on the Earth's surface. It brings students into contact with other disciplines in both the Natural and Social Sciences. It also seeks to make students aware

of the relationship of central political concepts to political activity and structures.

Topics that could be covered include:

- (a) Global ecosystems; world human population; environment and society; natural resources; threats to the environment; etc. Where appropriate, special reference to Malta should be made.
- (b) Government (rule of law and division of powers) and the principal institutions of social life.

Recommended Reading

B.J. Nebel, *Environmental Science; The Way the World Works*, Prentice-Hall Inc., 1986 (2nd edition)

P. Schembri and A.E. Baldacchino, *Ilma, Blat u Hajja*, 1992.

Further Reading

E.F. Schumacher, *A Guide for the Perplexed*, Har-Row, 1986.

- (iii) **History of the Mediterranean**

This unit is intended to encourage students to view the shaping of their nation's destiny against the background of the cultural forces that have acted and reacted upon one another in the Mediterranean. It should also create an awareness of the role of the Mediterranean in the world.

Recommended Reading

E. Bradford, *Mediterranean: Portrait of a Sea*, Hodder & Stoughton, 1987.

Further Reading

F. Braudel, *The Mediterranean and the Mediterranean World in the Age of Philip II*, Fontana, 1975.

A.P. Vella, *Storja ta' Malta*, Klabb Kotba Maltin, 1974.

- (iv) **Scientific Methods and History of Science**

This unit explores the steps by which physical science has grown, how it has attained to its present power and importance. Students should also be made to reflect on the moral and philosophical issues raised by the sciences.

Topics should include: facts and hypotheses, achievements and limitations of past and present models, divisions (physics, chemistry, biology, earth sciences, etc.) and correlations, their impact on society, and their relationship to other fields of knowledge.

Recommended Reading

J. Bronowski, *The Ascent of Man*, Futura, 1981.

Further Reading

M. Goldstein & I. Goldstein, *The Experience of Science: An Interdisciplinary Approach*, Plenum Press, 1984.

John North, *The Fontana History of Astronomy and Cosmology*, Fontana, 1994.

(v) **Forms of Art and Expression**

This unit aims to help students view works of art within a historical perspective and to perceive a coherent relationship between seeing and understanding, engendering an awareness of art as a major visible aspect of human endeavour. Also, this module helps the student understand the role of the artist, the architect, and the craftsman down the ages.

Recommended Reading

E.H. Gombrich, *Story of Art*, Phaidon Press, 1984.

Further Reading

K. Clark, *Civilisation*, Penguin, 1982.

J. Attali, *Noise*, University of Minnesota Press, 1985.

M. Buhagiar, *The Iconography of the Maltese Islands 1400-1900*, Progress Press Co. Ltd., 1987.

- 3.1.1 Books listed as Recommended Reading are intended to indicate the range of topics candidates are expected to be able to tackle. Candidates are not required to have read any of the books listed as **Further Reading**. They will, however, gain familiarity with approaches helpful to establishing interdisciplinary linkages related to central themes and applications to the Maltese context, by consulting some of them. Teachers may refer their students to as many, or as few, of them as they think fit.

3.2 **Part II**

In the second year students are to follow a modular course covering the following themes:

(i) **The Sea**

Joseph Conrad, *Nigger of the 'Narcissus'*

The sea has always exerted tremendous fascination on man besides being a major source of food supply and, for most of history, an essential means of communication between different continents and countries. It was consequently a determining factor in the establishment of trade routes. The power of the sea to fire the imagination has found an eloquent expression in great works of art and literature, not only during the Romantic period but also in all other periods of the history of civilisation.

Scientists believe that life started in the sea and it is significant that water covers three-quarters of the earth. This has earned for the world the name of 'Water Planet'.

The Sea as a source of energy has provided challenges to man who has only partially come to terms with its vast potential.

The exploitation of the resources of the sea has only recently become a major world concern and the subject of international fora. Pacem in maribus is an important case in point.

Throughout history the sea has been an important source of power and its control equated with world domination. Great nations have always been concerned with building powerful navies.

The sea is not only a means of bringing different peoples and cultures into contact with each other, it has often been a great divide. History is full of eloquent examples.

The recreational and leisure aspect of the sea is a final important consideration as borne out by the popularity of swimming, yachting, and other sea-oriented sports.

(ii) **Energy**

Omeru, *L-Odissea*, trans. Victor Xuereb [vide note on (e) Energy and Arts]

The concept of energy is one of the most basic and unifying ideas in science and in the relation between man and the physical world. It is also one of the most useful since, in the process of reviewing its multifaceted aspects, one will cut across physics, chemistry, and biology, as well as the arts, sociology, and history itself. The aim of this study-unit is to allow the student to experience this unifying and therefore intellectually-satisfying sense of power in all its diverse forms in nature.

A useful introduction to this study-unit is Chapter 8 of the book *The Ascent of Man* by J. Bronowski. However, it must be made clear to teachers and their students that this study-unit goes beyond the ideas expressed in this chapter, as can be seen by the detailed descriptions of the study-unit. No single book would be able to convey the broad approach to the study of the concept of energy and power. Moreover, it would be counterproductive to expect students to read a long list of books on the various aspects of this study-unit. Therefore, no specific reading list will be made available for this unit. The tutor is advised to introduce the various ideas presented below through discussions and by directing the students to read certain basic science texts and to consult articles, essays, and any other relevant reading material of the teachers' own choice. This calls for more preparation on the teachers' part, but will allow the teachers to develop the material to be discussed in a manner which would best suit their own background as well as that of the students.

(a) *Energy Transformations and the Laws of Nature*

- Energy as a single unifying concept in science;
- The diverse forms of energy;
- The First Law of Thermodynamics and Energy Conversions;
- The Second Law of Thermodynamics and the concepts of 'useful energy' (or FREE ENERGY) and dissipated heat energy resulting in

an increase in ENTROPY or disorder.

(b) *Energy and Chemicals*

- Energy changes during chemical reaction;
- The nature of CHEMICAL ENERGY in atoms, bonds, and molecules.

(c) *Energy and Life*

- Life as a continuous change at the levels of molecule (chemical changes or METABOLISM), individual (e.g. growth, movement, aging) and communities;
- The need of a continuous supply of energy to maintain life functions;
- The sun as the ultimate source of all energy available to life on earth, the role of plants and PHOTOSYNTHESIS;
- Energy flows through an ecosystem by way of food chains and trophic levels;
- Energy Resources and their use in agriculture, food production and distribution.

(d) *Energy and the Quest for Power*

- The role played by the utilisation of water and steam power in the dramatic social changes during the 18th and 19th centuries (i.e. the Industrial Revolution);
- James Watt and the development of the steam engine;
- Matthew Boulton, Benjamin Franklin, and the new dynamic and republican spirit.

(e) *Energy and the Arts*

- The use of form, composition, and colour to depict energy in the visual arts;
- The Romantic Poets and Painters and the concepts of Nature as a source of energy.
- To most candidates it is this section that will suggest obvious linkages with Homer's *Odyssey* through scenes and extracts illustrating the symbols of the power and energy of man in the fight against nature and in his relations with the supernatural. The more perceptive candidate is encouraged to think laterally and suggest links between Homer's work and other aspects of energy.

(f) *Energy and the Future of Mankind*

- Problems associated with excessive energy consumption by modern man: environmental pollution;
- Nuclear Power: nature, promises, and hazards;
- Alternative sources of energy for the future.

(iii) **Work and Leisure**

Hermann Hesse, *Siddharta*

Work and leisure are two essential components of everyday life which lend themselves to a discussion which can touch upon aspects from various fields of knowledge as indicated in the following description.

Although the description is divided into separate parts, the discussion on this theme should emphasise the interrelationship between its various aspects.

(a) *Distinction between work and leisure*

The distinction between work and leisure a person's work can be somebody else's leisure. Types of work: manual and mental, production and service. Types of leisure: active and passive, at different stages of life, in different cultures.

(b) *Sociological and Ethical Aspects*

The relationship between employer and employees: rights and duties of both. Trade unions and their functions. The changing concepts of the working class. Leisure: individual pastimes and groups activities, clubs. Leisure and social class.

(c) *Psychological Aspect*

Motivation and commitment to work.

Employment and unemployment or 'forced leisure'. The relationship between work, leisure, and creativity.

(d) *Economical Aspect*

Work and the generation of wealth. Leisure and the consumer society. The industry of leisure tourism.

(e) *Historical Aspect*

From crafts to mass production in the industrial revolution. From a feudal system to the new industrial 'barons'. The technological revolution and the need for updating and continued education of the workforce. Leisure as a relatively modern 'right'.

(iv) **Good and Evil**

William Golding, *Lord of the Flies*

John Finnis, *Moral Absolutes*

Good and Evil' imply values, the set of principles by which we live. This study unit introduces students to ethics. It examines the foundation of ethics as a science and deals with question of the subjectivity or objectivity of values. Different approaches to the foundation of ethics should be discussed.

The teacher is advised to introduce students to 'classical' ethics by raising thought-provoking questions, such as those raised by the 'intellectual midwife' of Ancient Greece, Socrates, who, by asking a whole series of new vital questions, diverted the stream of thought of his age into broader channels. He asked questions like 'Why are we alive?', 'How shall we live?', 'What is happiness? Justice? Goodness? Truth?' One can also tackle Platonic moral issues: the practice of the 'good life'; 'virtue' is knowledge.

The teacher is then to direct his students to consider contemporary

phenomena like torture, wars, abortion, euthanasia, and racism. Some attention should be given to the ethical problems arising from modern biological research and its practical applications, especially in genetic engineering and artificial insemination.

William Golding's *Lord of the Flies* has been chosen in full knowledge of the fact that it has been a set text, off and on, for a number of years in English literature. The members of the syllabus panel believe that reading this text in conjunction with John Finnis' *Moral Absolutes* will engender a deepened awareness of the moral implications of the children's behaviour described in the novel and lead students to explore the terms like 'natural law', 'original sin', 'culture', 'civilisation' etc., against an impellingly thought-provoking backdrop.

Recommended Reading.

Manwel Agius, *Bioetika*

John Finnis, *Fundamentals of Ethics*

- 3.2.1 The four literary texts are obligatory reading. They are intended to prompt candidates to adopt an interdisciplinary and crosscurricular approach. Edward Debono's *Mechanism of Mind* is a useful text for teachers seeking ways of prompting candidates to think laterally on the four themes and their associated texts.

Candidates are expected to reflect critically on the set texts and not merely reproduce memorised summaries. Reliance on such notes argues against the candidate's ability to think independently.

4. Part III

Project Technology and the Quality of Life

Candidates following the Systems of Knowledge course must complete a project on Technology and the Quality of Life.

Projects may be carried out by individuals or groups of not more than five candidates, provided that the personal contribution of each member can be identified.

4.1 Aims

The aims of the project is to achieve an understanding of what technology is ('application of knowledge for making and doing purposeful and useful things'- UNESCO) and its requirement of other knowledge besides scientific (e.g. skills in design, evaluation of solutions, etc.)

The project is intended to provide candidates with an opportunity of exercising the required skills in a relatively relaxed environment and is therefore more likely to lead to the production of interdisciplinary material characterised by some degree of integration.

4.2 Assessment

Assessment will be of a technological project, including

1. the production of an *object* or *programme* and
2. an *account of its making*, i.e.
 - (a) Problem to be solved, relevance, and constraints;
 - (b) Ideas (thought of, discussed, researched) for solution;
 - (c) Design (rough sketch, drawing, description, or first prototype) of solution;
 - (d) Construction;
 - (e) Testing;
 - (f) Evaluation; and
 - (g) Display / Modification.

4.2.1 In assessing the project, account will be taken of the candidates' ability to:

- (a) describe and apply facts, principles, and concepts related to the production of the object or programme;
- (b) give evidence of graphical and other communication skills necessary for describing the object or programme;
- (c) identify problems which lend themselves to solution through practical technological activity;
- (d) identify the resources required for solving practical technological problems;
- (e) produce and interpret data by means of diagrams, charts, graphs, experimental results;
- (f) think up and record ideas as likely solutions to problems;
- (g) describe the interaction between technology and the needs of society; and
- (h) record the production of the object or the development of the programme.

The level expected by the Board of Examiners in the project is comparable to that of a Craft, Design, and Technology (CDT) course in the fifth and final year of secondary school.

4.2.2 Recommended Reading.

T.R. De Gregori, *A Theory of Technology*, Iowa State University Press, 1987.

Further Reading.

J.F. Feibleman, *Technology and Reality*, Martinus Nijhoff, 1982.

M. Pirsig, *Zen and the Art of Motor-cycle Maintenance*, Bantam, 1976.

4.3 Approval of Proposed Projects

Projects should be thought up by the candidates and short descriptions of them must be submitted on the appropriate form to the Board of Examiners for approval at least fifteen months before the examination to which they refer, i.e.

for May/June 1996

by Friday 3 March 1995

Candidates will be informed whether their Project has been approved or

otherwise through the school or individually as the case may be. Project themes may not be changed without prior approval of the Markers' Panel.

The Systems of Knowledge project can form part of a broader project or undertaking of whatever nature so long as the Systems of Knowledge project is a distinct element of the whole activity.

4.4 Procedure for assessment

Candidates presented by Schools: Supervision and assessment of projects must be carried out by a teacher from the candidate's own school. Tutors will submit their mark, through the Head of School, to the Matriculation Support Unit, University of Malta. The school should make the projects available to the Board of Examiners for the purpose of carrying out the moderating exercise. Each candidate is required to be present during this exercise to answer any questions the examiners may put.

The projects of candidates attending a school may be carried out at the school or at home but they must be made available at the school for the purpose of the moderation exercise already referred to.

The assessment mark or the completed project must be submitted by schools by the following date:

for May/June 1996

Friday, 1 March 1996

4.4.1 Private Candidates: the projects presented by private candidates will be assessed directly by the Board of Examiners. Such projects should be readily portable and made available at the University for assessment on the following dates:

for May/June 1996

on 1 March 1996

However, a private candidate may join a school-based group for the project if the school authorities permit it. Such permission must be granted in writing by the Head of School and copied to the Board of Examiners. In such cases, the assessment of the private candidate's project will be school-based.

4.5 Re-sit of the Examination

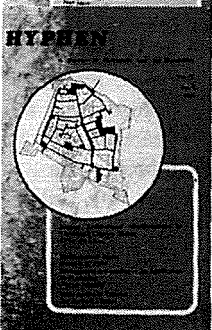
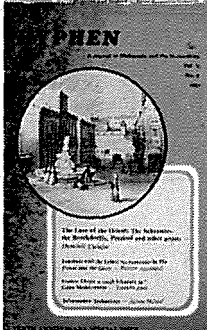
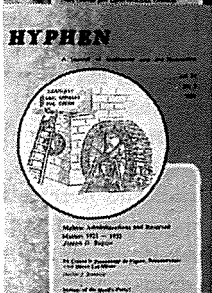
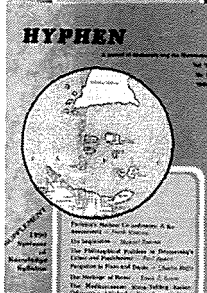
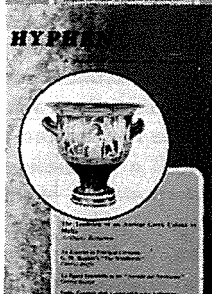
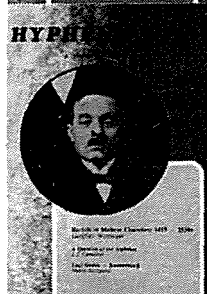
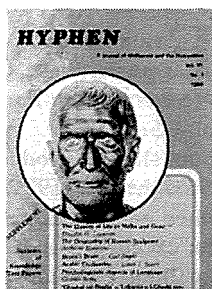
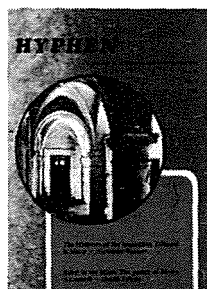
Candidates failing the examination are not obliged to present a *different* project when they re-sit the examination. In such cases the mark obtained for the first session project will remain the project mark applicable for subsequent sessions of the examination. In interpreting the word *different* in the first sentence, the Board of Examiners' decision is final.

HYPHEN A Journal of Melitensia and the Humanities

Minn meta ħareġ l-ewwel darba fl-1977, *Hyphen* gie stabbilit bħala perġodiku akkademiku ta' interess kemm għall-istudjuż u kemm għall-istudent. L-artikli dwar kull aspekk ta' melitensia huma miktuba minn awturi Maltin u barranin bħal A. Luttrell, A. Hoppen, D. G. Lochart, J. Boissevain, G. Wettinger, A. Bonanno, V. Mallia Milanes, A. Bonnici, O. Friggieri, u ħafna oħrajn. *Hyphen* huwa wkoll ta' għajjnuna indispensabbli għall-istudent li qiegħed ihejji ruħu f'suġġetti ta' livell avanzat, speċjalment għal min se jagħmel l-eżami ta' l-Oqsma ta' l-Għerf (*Systems of Knowledge*).

Hyphen jista' jinkiseb mil-Liċeo l-Ġdid Ġ.F. Abela, l-Imsida, kull numru 60ċ, jew Volum (b'sitt numri) Lm3.25ċ (posta mħallsa). Jistgħu jinkisbu wkoll ħarġiet ta' l-imġhoddi (60ċ kull kopja).

Għal aktar tagħrif ikteb lill-Bord Editorjali fl-istess indirizz.



ERNLE BRADFORD'S *MEDITERRANEAN: PORTRAIT OF A SEA*

Ernle Bradford's masterpiece *Mediterranean: Portrait of a Sea*, first published by Hodder & Stoughton in 1971, is once again available in an excellent reprinting by Tutor Publications.

Bradford's easy yet deep style is what makes *Mediterranean* so eminently readable. While the layman will find it a fascinating interpretation of the saga of the Middle Sea, the historian will appreciate Bradford's sound research, his clear exposition of facts and his wise conclusions – a combination of qualities in which Bradford's personal experiences sailing the seas has certainly had a great bearing.

Bradford guides the reader around the sea that gave birth to Western culture and civilization – introducing the traders, the sailors, and the fighters who have all left their mark on its history and our civilization, itself the

result of the continual interplay between East and West.

The author skilfully presents the history of the Mediterranean with one eye on its geography and another on the succession of historical events. Indeed the story of this sea is impossible to understand if one ignores the geographical environment of the various regions that form part of it. The Mediterranean

emerges as one whole, almost as a distinct personality whose portrait Bradford will so lovingly and so convincingly present to us.

For the variety of peoples and races that have been so inexorably attracted to its shores, the Mediterranean has been a link rather than a barrier, giving rise to, but finally overcoming, a diversity of cultures and beliefs.

