Technology and Manning in the 1990s

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Technology and Manning in the 1990s

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Introduction to the Technology and Manning Report

D. Bell
Deputy Chief Examiner (Masters and Mates), Department of Transport

INTRODUCTION

There are two fundamental attractions of offshore registries: reductions in taxation and lower manning costs. Of these the Department of Transport has responsibilities only in the field of manning. When the Department of Transport sought to contribute to the improvement of the efficiency of the fleet and indeed assist in reversing its decline, it was towards manning that it directed much of its attention.

Even in the field of manning the Department of Transport has responsibility for only a limited number of aspects. For example, it has no powers relating to crew wages nor to the social costs of employment. Its principal role is to set minimum standards governing both the levels of competency of individual crew members and the total skills, knowledge and manpower to be available on board. The standards must be adequate for the safe operation of the ship and no more, since the Department of Transport does not wish to place an unnecessary financial burden on the owner.

The setting of standards for marine training is much more than choosing the ingredients of an academic menu to satisfy the latest tastes in the educational field. When a ship proceeds to sea it must have on board all the requisite legal, managerial, maintenance and operational skills for the particular trade on which it is engaged. The requirements of all these areas must be taken into account when, making an assessment of the skills levels needed.

As a consequence of today's improved communications it is possible for certain ranges of tasks which were formerly essentially shipboard duties to be carried out by shore management. It is therefore necessary to decide whether duplicate skills are required on board. Traditionally any changes in training and certification were the result of the drawing together of the collective experience of the industry through various consultative procedures.

For some time there had been recognition within the Department of Transport that a need existed for a more wide-ranging investigation into shipboard operations. In particular it has realised that, before any radical changes were undertaken, an overview of the organisational environment should first be considered.

THE TECHNOLOGY & MANNING PROJECT

The Technology and Manning Project was designed to look more deeply at the background of these issues than would normally be possible by those directly involved in the day-to-day affairs of the industry. The study had to be conducted by people not intimately involved in the daily running of a shipping company, yet whose knowledge of shipping was both extensive and current. The chosen team fitted those parameters exceptionally well.

The project followed two principal lines of enquiry. It investigated the fleet likely to be in existence in the 1990s, in terms of ship types, technology and trading patterns, and considered the skills needed to operate that fleet, especially the alternatives available in terms of the re-clustering of skills.

The Department of Transport does not regard the Technology and Manning Project as an end in itself but the report gives a fresh authoritative base from which decisions can be reached. Conclusions have been drawn and recommendations made, but the implementation is largely in the hands of the shipping industry. Careful consideration must be given by the industry to the ways in which ships are operated.

If used fully, there now exists an opportunity to re-think the whole philosophy of ship operation. The Department of Transport can smooth the path for change and in sponsoring this research it has opened up avenues for innovative thinking, but no matter how much research is conducted the shipping industry must take decisions on its future needs before progress can be made. Without this re-appraisal the chance of effective change will be lost.

To help to explore the criteria for reaching particular choices, the issues must debated and discussed. This conference is an important stage in that debate.

Future Technology and Operating Practices in Shipping

L. A. Holder MPhil, FNI **and D. Griffiths,** BEng, MSc
Liverpool Polytechnic

INTRODUCTION

Judgement in adopting or rejecting new technology is likely to be a key to the success or failure of the European shipping industry. A necessary complement to good design is well motivated and properly trained manpower. Within developing economic and social trends, the way these factors are handled could open or close access to international markets and ultimately determine the state of the industry in the next decade. Associated training schemes could influence the employment opportunities of European nationals in merchant ships.

The financial and technical managers of a representative cross-section of UK companies were interviewed during the T & M study. They held the view that without additional fiscal and other measures, developed countries would not be able to redress the economic and social imbalance and compete successfully in an open shipping market. Without contradicting that view, the study team believe that the imaginative and practical use of new technology can help to improve efficiency. In this paper we hope to investigate the extent of the contribution that new technology and associated working practices can make towards safe and efficient shipping operations.

TIMESCALES AND OBJECTIVES

There are various ways of approaching a problem, and the Department of Transport urged the research team to proceed with caution. They required the team to establish the position in modern ships, then move modestly forward towards the 1990s. This is reflected in the layout of the study documents.[1] This approach is appropriate for incremental change.

An alternative approach is to set long-term objectives and then to create positive policies to attain them. Such an approach would have been more appropriate for personnel policies, such as education and training, where it is necessary to plan well ahead.

Progress within the industry over earlier decades, indeed over earlier centuries, had been incremental. The takeup of new ideas was tempered by the seafarers' natural and understandable caution. Someone leaving the industry for years and subsequently returning to resume a sea career would have a 'culture shock' but those who stayed would usually cope with each small change with a minimum of formal retraining. This may not be the case if full advantage is to be taken of more radical new designs and working practices. In a competitive international market, the person who is best prepared for change may well be able to gain a head start.

The old system has a built-in inertia. Constant vigilance is required if we are to make sure of adapting to circumstances and continuing a profitable service using all the resources at our disposal. Problems arise when we find ourselves constrained by earlier unwise investment decisions, inappropriate regulations or personnel who are not able to adapt within the required timescales.

A severe recession, such as that in which we find ourselves today, shortens time horizons, stops investment, and halts updating, and most people necessarily concentrate on the immediate problems of survival. It is essential in such times of crisis that someone should address the longer-term perspective and ensure that emergency measures do not become a death spiral. It is often only in long-term planning that more radical changes that can be considered.

IDENTIFYING THE CHALLENGE

Radical change needs faith and financial investment, neither of which have been readily available in the shipping enterprises of the developed world in recent years. To try to 'force the pace' and spearhead radical, positive, technical change, a number of countries decided to try to focus their research in a 'Ship of the Future' or similar project. The prime purpose of such an initiative may be to stimulate the shipbuilding and marine systems industries, but they also offer a pointer to the likely manning and training requirements.

The T & M Team worked closely with the UK 'Efficient Ship Study' groups, but also visited Norway, West Germany, Japan and the Netherlands, where national research projects had been carried out. The ideas on technical developments were also gleaned from structured interviews with systems and ship designers, from published literature, and from research establishments.

A 'shopping list' of the most important developments formed the basis of discussions with UK shipping company managers who are likely to be responsible for decisions to implement changes in equipment and/or operating procedures, in the representative company fleets. It is regrettable, but very significant, that only in one case was the interviewee recounting recent experience of real decisions on a newly-designed ship. In most cases, the companies were unable to contemplate investment in new systems because of the very low return which such investment would yield.

The Technology and Manning Report contains full details of the investigations and recommendations. The following examples have been chosen to illustrate the trends which are likely to take place as equipment is replaced, or old and inefficient tonnage is replaced with 'state of the art' automated ships.

THE SHIP/SHORE INTERFACE

The development of more efficient communications between ship and shore means that the respective roles of shore-based and shipboard managers can be reassessed and respon-

sibilities devolved or centralised. Used well, decision making could be sharpened to include more up-to-date commercial and operational information. The efficiency achieved here depends on the attitude and skills of the persons involved at each end of the link. As in many cases which follow, there is also a risk of introducing extra costs and inefficiency.

SHIP OPERATIONS

The role of those on board ship is slowly changing from watchkeeping to the management of automated plant. Taking a few examples from various traditional departments on board, the changes become evident. Each change, in itself, neither destroys the need for an individual's expertise on board nor makes a post redundant, but collectively the changes already add up to a radical revision and the innovation in competitor countries has not slowed as much as in the UK.

Engineroom watchkeeping

Two decades ago, it was not normal to run for 24 hours a day with unmanned machinery spaces. Today, the UMS concept from pilot to pilot is accepted as usual practice and some ships are already operating UMS berth to berth.

The changeover to day-work maintenance was a major step for marine engineers. They were required to adapt to working as a team, now reduced in number, with the content and balance of their workload revised. Their ability to adapt depended upon their training and experience, and by and large the change was effected smoothly, because they were part of a team which had built-in flexibility. There are still enough marine engineers on most ships to keep watches if the automation system fails disastrously.

Communication watchkeeping

The role of the deepsea radio officer as a watchkeeper has been slower to change because of technical difficulties with long-range terrestrial communications and the international agreements on safety watches etc. Continental shipping has already seen the duties of the Radio Officer re-allocated, and the deepsea ships are likely to follow as the new Global Maritime Distress and Safety System is implemented.

Bridge watchkeeping

The skill of celestial position-fixing which was the province of the deepsea navigating officer is likely to become redundant when Global Positioning Satellite Systems are in place in the 1990s, capable of giving accurate fixes in simple format on demand. Other aspects of voyage planning, collision avoidance, lookout and monitoring are not yet automated to the level at which the navigator can join his engineering colleagues on day-work on ocean passages. The balance of the skills exercised in his day to day job is likely to change.

The definition of the skills required to revert to basics in the event of a malfunction of the new equipment are a matter for debate between authorities responsible for safe manning and those responsible for the reliability and redundancy of the equipment.

Cargo watches

The skills required in cargo operations have become specialised in very diverse trades and there is little in common in the skills required for cargo loading and care, other than the effects of loading and discharge on stability, trim and stress. We may well have moved into an era in which cargo operations become the subject of specialist endorsements rather than national certification. This pattern is already established with hazardous cargoes.

In terms of manning, the preparation of cargo spaces was seen as a 'peak requirement' in some classes of vessel, such as dry bulk carriers.

Hotel and catering services

Experience with self-catering in coasting vessels has been quite successful, according to the evidence obtained at sea and during interviews, even though the people concerned had not received special training. There was no strong support for this arrangement to be extended into deepsea ships on long voyages, where specialist catering staff are responsible for the efficient purchase and utilisation of stores and the monitoring of hygiene of the vessel and the morale of personnel.

There are various technologies now available, such as induction cookers, convection ovens, cook-chill, cook-freeze and microwave ovens, which could alter the quantum and nature of the work involved. The design of the living spaces, and the reductions in manning, will also affect the need for catering and hotel services.

SEAMANSHIP AND SAFETY

Seamanship equipment was another area in which the reduced total number on board would call for changes in design and practices. Access to and from the vessel and mooring arrangements were key areas of attention. In fact, mooring was often seen as the 'peak workload' situation which determined the manpower requirements for the vessel.

ENGINEERING AND ELECTRONICS MAINTENANCE

Condition monitoring of main engine and auxiliaries attracts much attention and has considerable merit. Cost is an important factor in determining the choice of installation but reliability of the system must be an overriding consideration. Without doubt there will be an increasing trend towards the use of condition monitoring and expert systems for engine diagnosis but how far this will extend must depend upon the cost of the installation and its potential savings in terms of improved plant reliability. Although such systems may be made self-checking, they will not be self-correcting in the event of a fault.

A monitoring system will allow the engineer to plan his maintenance to suit operations and there should be a reduction in the amount of engine maintenance required. The skill of a future engineer will lie more in the diagnostic field. He will have assistance from monitoring and expert systems but will still need to use his own judgement to interpret rather than blindly follow. Although there have been efforts to improve the fuel quality situation by the setting of specification standards, it is still evident that some ships suffer problems related to fuel quality. That is always likely to be the case to some extent. An ability to analyse fuel on board, or at least be able to interpret the results of an analysis, will be essential.

When all other aspects of operational costing have been minimised, if that is ever possible, the requirement to burn fuel to produce power will always be there. Fuel efficiency is of paramount importance and only a well-maintained engine can operate at peak efficiency. Routine maintenance and adjustments with the guidance of a monitoring system would appear to be the ideal solution.

Breakdowns will still occur on any well run and maintained plant but monitoring systems can reduce the incidence. That system will not reduce the need for rectifying action if failure does occur. Complete 100% back-up could avoid shipboard maintenance whilst at sea but the cost is likely to be prohibitive. Improved engine reliability from 95% to 99% due to design alone is likely to double the engine price according to Wärtsilä.[2] The skilled engineer currently seems to be the most cost-effective means of ensuring reliable operation.

LONG-TERM OBJECTIVES

Despite talk of minimum strategic defence requirements and other criteria, the argument holds good that UK shipping services will be more extensive and more successful if they incorporate the following features:

1. A safe, efficient and valuable service to customers.
2. A good return on investment for the shipowner.
3. Good salaries and working conditions for sea and shore staff.

Within that overall requirement the various sub-elements also need to be optimised:

1. The operations need to be effectively and efficiently managed ashore and on board.
2. The ship and associated systems need to be well designed and reliable.
3. The people required to serve on board and ashore need to be properly trained.

One of the factors which can contribute to the successful operation of a UK merchant fleet in the 1990s will be the way in which the country tackles the matching of useful new technology applications with trained manpower.

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Implications of the Technology and Manning Research Project on Manning Structures in the British Shipping Industry

Professor D. H. Moreby, ExC, PhD, FNI
Plymouth Polytechnic

FUNDAMENTAL ISSUES

As an island nation, Britain will always need to use ships. One fundamental question is whether the British economy is best served by having some ships under UK control and manned by UK seafarers or whether the economy would be equally well served by foreign-owned, foreign-controlled and foreign-manned ships. Quite apart from the issue of defence, the British economy will be damaged in the long run if Britain does not have an adequate maritime infrastructure (ports, pilots, hull and cargo surveyors, lawyers, civil servants, academics, etc.) staffed by British citizens committed to the health of the British economy, rooted in the British culture and who have gained sufficient maritime knowledge from experience at sea.

In the old days British ships and shipping came under a single political and fiscal control. British ships were built in British shipyards; financed, controlled, traded, managed and manned by British citizens; carried British manufactured goods to British territories overseas and returned with food for British people and raw materials for Britain's industries. That scenario has disappeared forever.

A second fundamental issue that all must face is that there is now a geographical, political and fiscal split in the operation of ships. Today, ships are financed by banks in one or more countries, built in another, traded by managers in still another and manned by seafarers from yet another country. Thus we could redefine the British shipping industry as one in which there is a British presence (financially, managerially or socially, ie seafarers) no matter where the ships are registered, what flags they are flying, nor where the employers of the seafarers are located.

We have to face up to the fact that all of us in the industrialized countries are living in a world of 'too much' — too much steel, too many ships, too much money, too many people, too many cars, too much food, too much unemployment and too much competition. The third fundamental issue we have to face up to is that there are too few end-users who can pay for the goods we produce and too few shippers for the world's merchant fleet. We are in a world of too much supply and too little demand.

The fourth and final fundamental issue that will be raised concerns information technology (IT). All of us know far more about the world than our predecessors and forefathers knew. When Drake, Magellan, Vasco da Gama (to name but a few) explored the world there was no knowledge of what to expect and communications between the ship and home-base were almost non-existent. The captains of those voyages of discovery had to rely on their intuition and experience: there were no charts, no weather forecasts, no aircraft to carry out search and rescue missions, no means of readily communicating with the home-base. Under those conditions, a strictly enforced command structure was crucial for the survival of the ship and its crew.

Today, however, the seas of the world are well charted, there are navigational aids and weather forecasts, aircraft are available in many areas for search and rescue, but most importantly, world-wide communications are instantaneously available between ship and shore.

We are now living in a world of knowledge and information availability. Information technology has had a dramatic impact on every industry and commercial activity on this planet, and shipping is no exception.

THE IMPORTANCE OF INFORMATION TECHNOLOGY IN SHIPPING

As those who have read Volume II of the T & M project will already know, every shipboard function was evaluated under six features:

1. The extent to which the function involved data handling, from simple copying to analysis and decision-making.
2. The extent to which the function involved people, from simply communicating with another person to directing, supervising and counselling others.
3. The extent to which the function involved handling things, from simply placing an object in the correct place through to feeding and tending machines.
4. The frequency at which the function is performed (daily, weekly, monthly, rarely or never.
5. The criticality of the function, ie the effects of incompetence on loss of life, financial loss, damage to the marine environment.
6. The difficulty of people learning to carry out the function properly.

The evidence, gleaned from voyages on 10 ships and visits to four countries, is overwhelmingly clear: the real job of the modern ship's officer is handling data correctly, followed closely by getting the best performance from other people. Indeed, it can be claimed that ship efficiency is directly related to the effective measuring, recording, retrieval, transmission and evaluation of data.

Whether a ship is UK controlled, managed, traded, and manned, or a UK citizen is serving on a foreign owned and traded ship, one clear message from the T & M project is that everyone involved in the British shipping industry, whether

ashore or afloat, must develop skills in data handling and evaluation.

Indeed, the importance of data handling has increased with 'flagging-out'. Years ago, under the old system of UK flag, UK owners and UK manning, managers ashore knew the Captains, Chief Engineers and other Senior Officers sailing in 'their' ships. Today, there are technical managers/superintendents/advisors ashore who don't even know the names of the Senior Officers sailing in 'their' ships, let alone their individual strengths and weaknesses. Ship performance monitoring from shore, based on sound data, is the fastest growing business in shipping today!

OUT-DATED DEPARTMENTAL AND RANK DIVISIONS

Years ago, when Britain and British shipowners had comfortable, captive trades and cargoes, and when comparative technical/labour costs permitted it, British ships employed crews of 30 or 40 or more. Deck/Engine/Radio/Catering departmental divisions were not only acceptable but economically effective, as were Officer, Petty Officer and Rating divisions.

A factor so often neglected by seafarers, their employers and representative bodies is that, over time, the cost of automation equipment continues to decline while labour costs continue to increase. This applies not only to the OECD countries but also to the Third World. Thus today it is economically more advantageous to employ smaller rather than larger national crews, and this trend will continue: lower numbers of OECD national crews, coupled with cheaper automation and more advanced IT will ultimately overtake the present economic advantages of cheap Third World crews. But, and the reservation 'but' must be repeated, the economic advantages of cheaper automation will not be reaped by the OECD maritime nations unless we can develop greater 'role flexibility' onboard ship.

The French saw this years ago when French Shell ran their 'Dolabella' experiments and then introduced Polyvalent Officers. The Dutch have seen the merits of 'semi-integrated' officers and the Norwegians (although currently arranging an 'offshore' flag based in Oslo!) have seen the need to give all seafaring recruits a 'maritime technical training' based on the fact that a ship is, really, a floating machine.

The T & M project, by profiling functions in terms of Data, People and Things, has also shown the way for clustering roles in new, innovative and economically sensible ways. The Japanese, however, are further ahead than any other OECD owners and seafarers. Their thinking and actions have a message for all of us in the OECD maritime world. Since September 1985 all Japanese trainee officers are to be trained as De or Ed, while since September 1986 all their ratings are to be trained as de (upper case D or E means full Deck or Engine qualifications up to STCW Class 3, 2, 1 standards while lower case d or e means watchkeeping and remedial maintenance abilities).

Plymouth Polytechnic, quite independently of the T & M project and supported by Shell Tankers, took the view in 1985 that some form of 'dual purpose' or 'role flexibility' training was the best, if not the only, way forward for an OECD maritime nation and started the dual-purpose training of cadets in September 1986. Plymouth also accepts and trains recruits under the Supplementary Training Scheme. This is not meant as an advertising 'plug' for Plymouth but an indication of the positive steps that can and should be taken by training establishments if they are to support the UK economy, for surely that is what the educational establishments are funded to do.

THE CONDITIONS NECESSARY FOR CHANGE

The forthcoming book *Organizing for Competitiveness* by Professor Richard Walton of the Harvard Graduate School of Business Studies, with whom the author of this paper has collaborated, should not be ignored by anyone involved in shipping in the OECD maritime countries. In his book Professor Walton raises four conditions for competitiveness and change:

1. Is the proposed change economically sensible, ie are there gains for the national economy in the widest meaning of the words?
2. Is the change socially acceptable to the people who have to work within and operate the new system?
3. Is the change institutionally acceptable, ie by the Trades Unions, Government Departments, Employers Associations, Educational Establishments, etc?
4. Is the change politically acceptable, not only to the political party in power but also to the social ideology of the country?

There is another condition necessary for bringing about change:

5. Where is the champion? Who is the one person or small group of people who will drive through the necessary change?

AN EVALUATION OF THE T & M PROJECT

The T & M Project was funded in cash by the Department of Transport (Marine Directorate) and in kind by the Department of Education and Science, both of whom have been accused in the past of being Luddites and retarding progress by excessive regulation. Yet here, in the sponsorship and findings of the T & M project, all of us involved in shipping in Britain have data and encouragement for a positive way forward.

The T & M project provides a sound database to allow UK owners, managers and seafarers to organise themselves to become globally more competitive. The data show that we can man ships (within STCW requirements) in almost any way we choose and trade ships of various sizes and manning configurations world-wide provided proper use is made of modern IT techniques.

The barriers to 'organizing the UK fleet for competitiveness' lie in our present mariners (both ashore and afloat) who are justifiably proud of the knowledge and skills they gained from their past experiences and in our institutions (professional, academic and regulatory) who, again understandably and justifiably, are trying to upgrade the social status of their members.

Change is both economically sensible and politically desirable, and we should all realize that we owe a duty to the continued health of the UK economy, an economy that supports each one of us and our families.

FUTURE ACTION

There are too many seminars and conferences at the end of which participants say to themselves 'Gee, that was interesting' or 'I would love to implement that idea' and then return to their offices and do nothing.

Time is running out for the British shipping industry. If all of us currently involved in British shipping do not act now (with the support given by the T & M project), the British shipping industry will disappear to the ultimate detriment of the UK economy.

The T & M project shows clearly the need for 'role flexibility' across departments and across ranks (in both directions). The results of the T & M project call for deck and engineering officers to be flexible and inter-changeable and also indicates the need for the abolition of officer/rating differences. But how can we expect our seafarers to be flexible and integrate both socially and professionally when they are administered by and owe professional loyalty to different institutions?

The most constructive steps participants could take after this seminar are to work towards the following:

1. The merger of the nautical and marine engineering/ technical divisions in their companies.
2. The merger of the Nautical Institute with the Institute of Marine Engineers.
3. The merger of NUMAST with the NUS.

All of these are politically and socially sensitive issues but, unless all of us grasp and resolve these 'prickly' problems, the UK flag shipping industry is doomed.

The well managed and imaginatively sponsored and financed T & M project produced results that offer economic opportunities for all British-owned, British-managed and British-manned ships. Anyone who ignores the results does so at his peril, and at the peril of his ship, his company and his institution.

Future Manning Practices and the Shipowner

T. D. Underwood
Denholm Ship Management (Holdings) Ltd

INTRODUCTION

Three papers from experts concerned with the Technology and Manning Project have been presented and it is not the purpose of this paper to go again over that ground in detail. The work was most exhaustive and many companies from all sectors of the industry were able to help including, I am pleased to say, my own company.

The basis of the project was, of course, the UK fleet, and the recommendations were aimed at the action needed to be taken by Government, employers, seafarers' organisations and training establishments in order to match the manpower for the 1990s in terms of numbers and skills with the UK fleet in the 1990s. But what in the future do we mean by the UK fleet?

There is the underlying concept in the project of ships owned by UK nationals, registered in the UK, and manned by seafarers resident in the UK. This premise is only valid if it is accepted that UK shipping interests will be restricted to those trades and activities where labour costs are not so significant, which in effect means highly sophisticated ships capable of being operated with small crews and, most importantly, that the financial returns from those trades will justify the high level of investment.

Alternatively we see a return to highly restrictive cabotage practices by this country. However, in either scenario the fleet owned by UK interests would be very much smaller than it is today, certainly under 100 ships.

Hopefully British shipping will survive on a reasonable scale with sufficient resources which will allow it to discover new niches, identify trends in trades and be prepared to exploit them, and build on existing services. This means a composite industry, that is UK-registered vessels with UK seafarers operating alongside British-owned Foreign-registered vessels manned by foreign nationals with, hopefully, a proportion of UK seafarers.

The economic facts mean the Foreign-registered element will be much greater than the UK-registered element.

We must accept the following, whether we like it or not:

1. Shipping is a truly international business.
2. The shipowner has a unique ability (compared with manufacturing and other service industries) to draw on the worldwide labour market.
3. That market contains a growing number of seafarers (officers as well as ratings) properly trained and certificated to STCW standards, who are available for employment at third-world rates of pay.
4. The governments of many less developed countries seek to promote the employment of their national seafarers in overseas tonnage.

It is against this background that I make my remarks about future manning practices in the remainder of this paper.

NATIONAL OR NON-NATIONAL MANNING ?

The essential difference between deepsea shipping and virtually any other enterprise in manufacturing and service industry is that the workplace and the labour force are constantly on the move: the constraints of a fixed location which largely determine the employment practices of shore industry are totally absent. Uniquely the shipowner can draw on the worldwide labour market without any practical necessity to relate remuneration levels to any national standard other than that of the country from which he recruits his crew and to which he will eventually return them. It is there that they maintain their families, there that they will return when the job is finished, and there that in all likelihood they will seek to live when their working days are over.

Of course, there is nothing new in this, UK shipowners have employed foreign seamen for many generations. For example, an honourable tradition of inter-dependence grew up between Shipping Lines and their Indian workforce and in time the collective bargaining institutions were duplicated on the Indian sub-continent. Other European owners developed similar links with other countries in Asia, Africa and South America.

All that was a long time ago but it served us well in peace and war. Latterly the question of non-national manning has again assumed greater significance. In essence this has been due to:

1. Economic pressure on the shipowner brought about by highly depressed market conditions.
2. The expanding availability of trained maritime labour in countries where wage levels are at the lower end of the world scale.
3. The deliberate policy adopted by governments of many less developed countries of seeking to promote the employment as seafarers of their nationals in overseas tonnage.

The comparative costs of manning a ship with seafarers from less developed, as distinct from European, countries are known to all in international shipping, but for the record I will specify the following crew costs quoted to a UK owner:

UK flag	UK seafarers	$908 000 pa
Liberian flag	Korean seafarers	$490 000 pa
Hong Kong flag	Hong Kong seafarers	$396 000 pa

More unexpected perhaps is the figure of $338 000 quoted for manning with Polish seafarers under an open-registry flag. Is it in any way surprising that, against the world shipping background of vast over-tonnaging, cut-throat competition and utterly depressed charter and liner rates, owners have to seek to eliminate these cost margins over their competitors if they are to stay in business at all?

Much time and energy has been wasted in arguments about the concepts of Open Registers and non-national manning. The fact is that these are part of the fabric of today's and tomorrow's shipping industry and are here to stay. Surely it is better for a UK owner to maintain a shipping activity under another flag than to cease to maintain it at all? By so doing, he provides some level of direct employment for UK seafarers, a balance of payments inflow, and supports the host of ancillary industries which depend on shipping for their existence. Indeed a not insignificant part of the manning of UK-owned non-UK tonnage consists of UK seafarers. These jobs would have gone completely if the ships had not flagged out.

Nor is it correct to assume that non-UK seafarers are in some way inevitably of a lower standard than UK nationals. Let there be no mistake, some are very fine seamen indeed and it must not be forgotten that there are bad eggs in every national basket. The so called 'offshore' registers are a relatively recent development in both the UK and in other traditionally shipowning nations. A very recent and currently popular example is the Isle of Man. They are perhaps a half-way house to complete severance from the flag of the country where the beneficial ownership resides. In a substantial number of cases owners have concluded agreements with their national unions for the employment of their members under an offshore agreement which can go a long way towards achieving the cost savings necessary to enable them to retain national seafarers in employment. Such developments are to be welcomed.

It will be apparent from what I have said that the shipowner looks at the manning of his ships from the point of view of cost-effectiveness. He recognises that the cheapest crew is not always the best. He needs not merely a crew whose levels of qualification meet the internationally agreed minimum standards (STCW) but one which is going to operate his ship reliably and economically, preserving good relationships with his customers and achieving an optimum level of maintenance on board. Availability is an important factor as is relative proximity to the area of the ship's operation to avoid excessive travel costs.

The owner can achieve all of these features under a flag other than that of his own country. On the other hand, there may be compensating advantages to him to operate under his national flag. National law may require it, he may receive national subsidies or tax concessions, cargo may be reserved to the national flag under cabotage requirements or bilateral agreements, or he may perceive a marketing advantage in maintaining a national identity.

This is the environment within which the generality of shipowners operate. The flag of the ship and nationality of the crew is for the owner or manager to decide. Many will want to continue to engage UK-trained seafarers and for UK seafarers there will be a continuing role, not as a right but as a choice — a choice by the individual to offer his services to whichever owner or manager is able to engage him on terms that are mutually acceptable and a choice by the owner or manager to engage UK nationals as the best contribution to the service he offers to his customers.

TECHNOLOGY AND MANNING

Shipowners are right to be cautious regarding the commercial benefits to be derived from what is described as the 'higher technology' ship. As reported by the project team, the cost of additional equipment or systems must be more than offset by reductions in operating costs to justify the investment involved. Nevertheless, it is fully accepted that advances in technology will, in time, lead to significant changes in work aboard ship, greater role flexibility, improved efficiency and, hopefully, more competitive manning.

Whether this can be planned on a national industry-wide basis is a matter for debate given that the investment decisions required are made by individual owners whose trading circumstances vary enormously. The underlying question is will such changes follow technological developments or will they be planned to give a lead to technology? The former seems the more likely route and one which has history on its side.

TRAINING

A vital ingredient in any scenario for the future of UK shipping must be the availability of efficient and well trained seafarers. There is ample evidence to suggest that many owners and managers would wish and intend to continue to employ from the UK labour market for the foreseeable future but their ability to do so as far as officers are concerned must be in doubt if current levels of training continue.

Like so many aspects of shipping, the supply of and demand for trained personnel to man our ships has a cyclical nature. We have been through successive periods of shortage over the last three decades but never since the periods of the depression have we seen such an over-supply of seafarers as we have experienced recently and which is continuing for ratings. Against the background of declining fleets, substantial redundancy programmes and uncertainty about future trading prospects, companies have sought and, until recently, have been able to fill vacancies from amongst those already employed or, if this is not possible, to recruit from the ranks of experienced and qualified unemployed officers both within and without the Merchant Navy Establishment. Meanwhile, the number of cadets under training has fallen by 87% over the past five years from some 5,300 in 1981 to some 700 in 1986.

This time round we appear to be going from a period of over-supply to a likelihood of shortages over a much reduced timescale and there is the added dimension of 'flagging-out'. There is genuine concern that with current levels of training, the supply of newly qualified officers will be reduced to a trickle with important consequences which are of national concern. Inevitably, any shortfall will be filled from the increasing number of foreign nationals being trained abroad. This is not in the longer-term national interest nor is it in the interest of UK nationals seeking employment at sea.

Underlying the current training arrangements, under which individual companies recruit trainees to whom they expect to be able to offer employment on completion of training, is the assumption that each company will train sufficient people to meet its own future requirements. Given the length and cost of officer training (some £18 000 over 3 to 4 years for a 'first' certificate), it is understandable in the present circumstances that some owners and managers are unable to justify this commitment when they cannot forecast with sufficient confidence their requirements over the timescales involved. Under current arrangements, no company can be expected to train beyond the number of cadets for whom they have no doubt there will be vacancies. So what needs to be done?

Within the industry we have tried to solve some of these problems by negotiating changes in the pay and conditions package of cadets and agreeing schemes to reduce the length of

training. We have tried and failed with a grant/levy system to spread the cost of training across all potential users. More recently, we have encouraged the development of new courses which make more use of the publicly funded further and higher education system.

Often referred to as 'front-ending', an advantage of this approach is that the companies' commitment could, if they wished, be confined to the provision of the necessary training and experience at sea.

Some progress has been achieved but the nature of employment in the industry, coupled with the sea-service requirements of the DTp, create practical difficulties, particularly with regard to the availability of grants for students whilst attending college. This explains the limited recruitment to date for 'front-ending' courses which can be offered only at a small number of specialist maritime colleges.

There are no easy solutions to the training problem given the number of parties with an interest in the qualification process. The Technology and Manning (T & M) project notes that the requirement for sea training in all the countries visited is funded or subsidised by the state and goes on to recommend that the provision of seagoing training berths on a national basis should be considered in the UK. I would go further and suggest that there is a need to consider the provision and funding of all elements of the training package, ashore and afloat, on a national basis.

CERTIFICATION

The existing structure of certificates is based on the traditional roles of officers and ratings in separate operational departments. Thus we find, for instance, that the deck officer certificates embrace all the functions traditionally associated with the deck officer's role such as watchkeeping at sea and in port, cargo handling and hull maintenance, whilst engineer officers are trained in maintenance and repair skills as well as operational and maintenance functions.

If there is to be greater role flexibility to take advantage of technological developments, the concomitant requirement is flexibility in the qualification to be obtained by individuals. For instance is it sensible to require a dual-capacity officer to qualify in all aspects of both of the traditional functions? It would if one person was expected to carry out each role as we now know it but would not if, for instance, we simply wanted a person trained as an engineer (primary skill) to be qualified to keep a bridge watch (secondary skill) but not the full range of the deck officer's current role.

Shipowners would welcome this kind of flexibility in the qualifications process but it is doubtful if there would ever be one 'right' model for all owners. Perhaps the best approach is for all of us with an interest to adopt an overall approach to ship knowledge, skill and manning requirements in place of the present strictly departmental philosophy and to develop modular blocks of skills (and qualifications) as an alternative to the present training and certification structure.

Achieving these objectives will bring in associated issues such as trends in shipboard work and organisation, future knowledge requirements, and future training arrangements including the desirability of single-point entry and front-ending much of the 'academic' aspects of the training requirements. Implementation of these objectives depends in part on a changed regulatory framework, in part on action by shipowners and in part on action by the training providers.

CONCLUSION

I fully appreciate that my words on the issue of national manning may not be well received but even in ancient times Cassandra had an important role to play.

The concept of a 'national' Technology and Manning project is sound but in building on the work carried out we must bear in mind that the overriding need if a significant UK merchant fleet is to continue into the 1990s is a fiscal/financial national policy in which UK (and for that matter other Western) shipowners are able to trade cost-effectively. Given the will of all concerned to succeed, and the wide spread of interest in this conference is a basis for optimism, then a future for British Shipping will be assured.