SEA POWER

IN THE NEW CENTURY

EDITED BY JACK MCCAFFRIE AND ALAN HINGE

SEA POWER IN THE NEW CENTURY

Maritime Operations in Asia-Pacific Beyond 2000

edited by
Jack McCaffrie and Alan Hinge

Australian Defence Studies Centre

AUSTRALIAN DEFENCE FORCE ACADEMY

THE UNIVERSITY OF NEW SOUTH WALES

Sea Power in the New Century: Maritime Operations in Asia-Pacific Beyond 2000

ISBN: 0 7317 0418 5

Disclaimer
The views expressed are those of the authors and do not reflect the official policy or position of the Department of Defence or the Australian Government.

Typesetting: Margaret McNally
Cover design: Flying Fox Typography and Design
Printed by: Document Production Centre, University College

Contents

PART TWO
MARITIME OPERATIONS BEYOND 2000

Surface – Air Operations

Underwater Operations

PART THREE
COOPERATIVE NAVAL ACTIVITIES BEYOND 2000

GLOSSARY OF TERMS

AAW	Anti-Air Warfare
ACCM	Acoustic Counter Countermeasures
ACDEV	Assistant Chief of Defence Force for Development
ADF	Australian Defence Force
ADI	Australian Defence Industries
AEW&C	Airborne Early Warning and Control
AFTA	ASEAN Free Trade Area
AGI	Auxiliary-General-Intelligence
AIP	Air Independent Propulsion
AMASS	Australian Minesweeping and Surveillance System
AMM	ASEAN Ministerial Meeting
ANZAC	Australian and New Zealand Army Corps
ANU	Australian National University
AOR	Replenishment Oiler
APEC	Asia-Pacific Economic Community
APSC	Air Power Studies Centre
ARF	ASEAN Regional Forum
ARM	Anti-Radiation Missile
ASEAN	Association of South East Asian Nations
ASEAN-PMC	ASEAN Post Ministerial Conference
ASM	Anti-Shipping Missile
ASUW	Anti-Surface Warfare
ASW	Anti-Submarine Warfare
ATACMS	US Army Tactical Missile System
AWACS	Airborne Early Warning and Control System
BA	Bachelor of Arts
BDA	Battle Damage Assessment
BMD	Ballistic Missile Defence
C2	Command and Control
C2W	Command and Control Warfare
C3I	Command, Control, Communication and Intelligence
CAD	Computer Aided Design
CAM	Computer Aided Manufacturing
CARAT '95	Cooperation Afloat Readiness and Training Program
CBM	Confidence Building Measures
CCC	Concepts and Capabilities Committee
CDF	Chief of the Defence Force
CEC	Cooperative Engagement Concept
CEDP	Common European Defence Policy
CFSP	Common Foreign and Security Policy
CIA	Central Intelligence Agency
CIC	Combat Information Centre
CINCPAC	Commander in Chief Pacific Area
CIW	Counter-Insurgency Warfare
CIWS	Counter-Insurgency Warfare System
CMC	Central Military Committee

CMP	Centre for Maritime Policy
CO	Commanding Officer
COMAR	Coastal and Marine Science
COOP	Craft of Opportunity
CRU	Control and Reporting Unit
CSCAP	Council for Security Cooperation in Asia-Pacific
CPX	Command Post Exercise
DD	Destroyer
DDG	Guided Missile Destroyer
DDH	Helicopter Destroyer
DE	Destroyer Escort
DF	Direction Finding
DFRT	Defence Force Remuneration Tribunal
DIS	Dyad Influence System
DRDO	Defence Research and Development Organization
DSTO	Defence Science and Technology Organization
EAEC	East Asia Economic Caucus
EAEG	East Asia Economic Group
ECCM	Electronic Counter-Counter Measures
ECM	Electronic Countermeasures
EDI	Electronic Data Interchange
EEZ	Exclusive Economic Zone
ELINT	Electronic Intelligence
ESM	Electronic Support Measures
EU	European Union
EW	Electronic Warfare
FAA	Fleet Air Arm
FAO	Food and Agriculture Organization
FCP	Fleet Concentration Period
FCPB	Fremantle Class Patrol Boat
FF	Frigate
FFG	Guided Missile Frigate
FLIR	Forward Looking Infra Red sensors
FPDA	Five Power Defence Arrangements
FORTAN	Fortress Andaman and Nicobars
FSPPC	Force Structure Programming and Priorities Committee
G-7	The Group of Seven Major Global Economies
GCC	Gulf Cooperation Council
GDP	Gross Domestic Product
GNP	Gross National Product
GPS	Global Positioning System
HF	High Frequency
HITS	High Interest Target Signals
HMAS	Her Majesty's Australian Ship
HMS	Her Majesty's Ship
HMS	Hull Mounted Sonar
HQADF	Headquarters Australian Defence Force
ICOD	International Centre for Ocean Development
IFOR	International Fellowship of Reconciliation
IGC	Inter-governmental Conference

IGOC	Inter-governmental Oceanographic Commission
IHO	International Hydrographic Office
IMO	International Maritime Organization
INCSEA	Incidents at Sea
INS	Indian Naval Ship
IOC	International Oceanographic Commission
IOC	Indian Ocean Commission
IOMAC	Indian Ocean Marine Affairs Cooperation Council
IOR	Indian Ocean Rim
IOZOP	Indian Ocean Zone of Peace
IPKF	Indian Peacekeeping Force
IR	Infra Red
ISAR	Inverted Synthetic Aperture Radar
ISEAS	Institute of Southeast Asian Studies
JDA	Japanese Defence Agency
JCC	JORN Coordination Centre
JDOR	Joint Development Operational Requirement
JMA	Joint Mission Areas
JMSDF	Japanese Maritime Self Defence Force
JOTS	Joint Operations Tactical System
JORN	Jindalee Operational Radar Network
JPV	Joint Patrol Vessel
LAC	Line of Actual Control
LCAC	Landing Craft Air Cushioned
LFA	Low Frequency Active (sonar)
LGB	Laser Guided Bomb
LOSC	United Nations Convention on the Law of the Sea
LOTS	Logistics Over the Shore
LRMP	Long Range Maritime Patrol
LST	Landing Ship Tank
MAD	Magnetic Anomaly Detector
MAF	Malaysian Armed Forces
MAJDP	Malaysia Australia Joint Defence Program
MAO	Maritime Air Operations
MAWS	Missile Approach Warning System
MCSBM	Maritime Confidence and Security Building Measures
MBA	Master of Business Administration
MCM	Mine Counter Measures
MDV	Mine Disposal Vehicle
MHC	Mine Hunter Coastal
MIC	Maritime Intelligence Centre
MIF	Multi-national Interception Force
MIMA	Malaysian Institute of Maritime Affairs
MMIMS	Modular Multi-Influence Mine Sweep
MP	Member of Parliament
MPA	Maritime Patrol Aircraft
MSC	Minesweeper Coastal
MTCR	Missile Technology Control Regime
NAF	Naval Air Force (China)
NAFTA	North American Free Trade Association

NATO	North Atlantic Treaty Organization
NAPS	Naval Control and Protection of Shipping
NDPO	National Defence Program Outline
NIH	New Intermediate Helicopter
NPT	Nuclear Non-Proliferation Treaty
NSA	National Security Agency
NZDF	New Zealand Defence Force
OIS	Operational Information System
OPC	Offshore Patrol Combatant
OPV	Offshore Patrol Vessel
OTH	Over the Horizon
OTHT	Over the Horizon Targeting
PLA	People's Liberation Army
PLA-N	People's Liberation Army - Navy
PRC	People's Republic of China
PROMAR	Promotion of Marine Science
PUP	Progressive Upgrade Program
PV	Patrol Vessel
PVDS	Propelled Variable Depth Sonar
R&D	Research and Development
RAAF	Royal Australian Air Force
RAN	Royal Australian Navy
RAND	Research and Development Corporation
RAWS	Role Adaptable Weapon System
RFT	Request for Tender
RIB	Rigid Inflatable Boat
RMA	Revolution in Military Affairs
RMN	Royal Malaysian Navy
RN	Royal Navy
ROV	Remotely Operated Vehicle
RPV	Remotely Piloted Vehicle
RRF	Rapid Reaction Force
RSN	Republic of Singapore Navy
SAARC	South Asian Association for Regional Cooperation
SADC	Southern Africa Development Community
SAM	Surface to Air Missile
SANF	Standing ASEAN Naval Forces
SAPTA	South Asian Preferential Trading Agreement
SAR	Synthetic Aperture Radar
SDSC	Strategic and Defence Studies Centre
SDF	Self Defence Force
SEAPOL	Southeast Asian Program on Ocean law and Management
SIGINT	Signals Intelligence
SLAM	Submarine Launched Anti-Air Missiles
SLOC	Sea Lines of Communication
SOLAS	Safety of Life at Sea
SOP	Standard Operating Procedure
SPREP	South Pacific Regional Environment Program
SPS	Self Propelled Variable Depth Sonar
SRBM	Short Range Ballistic Missile

SSBN	Nuclear Powered Ballistic Missile Submarine
SSM	Surface to Surface Missile
SSN	Nuclear Powered Submarine
SSTD	Surface Ship Torpedo Defence
STOVL	Short Take Off and Vertical Landing
SWATH	Small Waterplane Area Twin Hull
TMD	Tactical Missile Defence
TBM	Trust Building Measures
TENCAP	Tactical Exploitation of National Capabilities
TEU	Twenty Foot Equivalent Units
THSS	Training and Helicopter Support Ship
TREDMAR	Training and Education in Marine Sciences
UAV	Unmanned Aerial Vehicle
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea
UNEP	United Nations Environment Program
UNESCO	United Nations Educational, Scientific, and Cultural Organization
U.S.	United States of America
USA	United States of America
USAF	United States Air Force
USCINCPAC	United States Commander in Chief Pacific area
USFJ	United States Forces Japan
USN	United States Navy
USS	United States Ship
USSR	Union of Soviet Socialist Republics
UUV	Unmanned Underwater Vehicle
VDS	Variable Depth Sonar
VLS	Vertical Launch System
VMM	Variable Magnetic Moment
VSTOL	Vertical or Short Take Off and Landing
WEU	Western European Union
WIP	Warfighting Improvement Program
WMO	World Meteorological Office
WPNS	Western Pacific Naval Symposium
WTO	World Trade Organization
ZOPFAN	Zone of Peace, Freedom and Neutrality

Notes on Contributors

COMMODORE W.S.G. BATEMAN (RAN Retd), is the Executive Director of the Centre for Maritime Policy (CMP), University of Wollongong. Under his supervision the Centre is pursuing an active program of research, consultancy and teaching in maritime affairs. He is the joint chairman of the Maritime Cooperation Working Group formed under the auspices of the Council for Security Cooperation in the Asia-Pacific (CSCAP). Previously he completed nearly 40 years service in the Royal Australian Navy (RAN), the last three as the Director General, Maritime Studies Program. His RAN experience included command of the Fleet units HMA Ships YARRA and HOBART, service in Papua New Guinea and several postings in the force development and strategic policy areas of the Australian Department of Defence. He has graduate and postgraduate qualifications in economics and has contributed widely to publications dealing with defence and maritime issues.

REAR ADMIRAL CHRIS BARRIE (RAN) was, at the time of delivering this paper, the Deputy Chief of Naval Staff. He has since been promoted to Vice Admiral and has taken up the position Vice Chief, Australian Defence Force. His RAN experience has included command of the Fleet unit HMAS STUART and the warfare training establishment HMAS WATSON, service in the USA and India as well as postings in force development and as Deputy Maritime Commander. He holds both a Bachelor of Arts (BA) and a Masters in Business Administration (MBA).

DR JAN S. BREEMER is an Associate Professor of National Security Affairs at the US Naval Postgraduate School, Monterey, California. Born in the Netherlands, he holds a PhD from the University of Southern California and prior to his present appointment spent 11 years in Washington DC as a defence analyst. He has published extensively on maritime security issues.

DR DEREK DA CUNHA is a Senior Fellow at the Institute for South East Asian Studies (ISEAS), Singapore and editor *of Contemporary Southeast Asia* and of the current affairs monthly *Trends,* which circulates a four page broadsheet in Singapore's *The Business Times* newspaper. He holds a MPhil from Cambridge University and a PhD from the Australian National University and is a former research scholar in the Department of International Relations at that institution. He writes widely on strategic issues affecting the Asia-Pacific region.

HECTOR DONOHUE is the General Manager Mine Countermeasures with Australian Defence Industries (ADI). Prior to joining ADI he had completed in excess of 30 years service in the RAN as both a Mine Warfare and Clearance Diving and Torpedo Anti-Submarine specialist. His naval experience included command of the Fleet units HMA Ships YARRA and DARWIN, as well as a number of positions in policy and force

development in Navy Office and Headquarters Australian Defence Force (HQADF), where he played a major role in the 1991 Australian Defence Force Structure Review. He holds a BA from the University of Canberra and a Master of Arts (Hons Class 1) from the University of NSW. He is also a graduate of the Australian Administrative Staff College.

GRAEME DUNK is a private consultant who undertakes strategic and maritime force structure work for Australian industry and the Department of Defence. Prior to commencing work as a consultant he served for 20 years in the RAN, where he specialised in anti-submarine warfare, and was author of the Australian Defence Force's recent *Anti Submarine Warfare (ASW) Capability Study.* He is a graduate of both the University of NSW (BA and MDefStd) and the London Institute (MSc). He has published widely on strategic and defence subjects and is the naval correspondent for the *Australian Defence Business Review.*

DR NORMAN FRIEDMAN is a defence analyst based in the USA and concerned primarily with the interaction between technology and tactical, strategic and policy issues. He was a staff member and then Deputy Director of National Security Studies of the Hudson Institute from 1973 to 1984, and has served as a consultant to the US Department of Navy and various defence contractors. He has lectured at the US Naval War College, the US Naval Postgraduate School, and other US and Canadian based military staff colleges. He is very widely published on defence topics and writes the biannual *US Naval Institute Guide to World Naval Systems.*

TONY GRAZEBROOK is the editor of *Asia-Pacific Defence Reporter,* and the Australian correspondent of Jane's *Navy International* and the British naval newsletter NAVINT. He has completed over 40 years as a naval reservist in the RAN and has had a lifelong interest in naval affairs and naval history. He writes regularly on contemporary defence, defence industry and naval affairs.

DR B.A. HAMZAH is the Director-General, Malaysia Institute of Maritime Affairs (MIMA). His background and experience includes service as a commissioned officer in the Malaysian Armed Forces, Head of Strategic Studies and International Relations at the Armed Forces Defence College, Kuala Lumpur and Assistant Director-General, of Malaysia's Institute of Strategic and International Studies. He has written extensively since 1980 and has presented numerous papers at international seminars on strategic and maritime issues.

GROUP CAPTAIN JOHN HARVEY (RAAF) is the Director of the Air Power Studies Centre (APSC). He has served twenty years in the RAAF, including tours with Canberra and F111 bomber squadrons. His service experience also includes a number of positions in the intelligence, force development and policy areas of the ADF, as well as exchange service with the Ministry of Defence, New Zealand. Most recently, he has been a visiting fellow at the Strategic and Defence Studies Centre (SDSC), Australian National University (ANU). He will assume the position of the Australian Defence Attache to Southern Europe, based in Rome Italy late in 1997.

LIEUTENANT COMMANDER ALAN HINGE (RAN) holds a Masters Degree in Strategic Studies and a BSc (Physics), both from the ANU. In 1984 he became the first junior officer in the ADF to be awarded a Defence Fellowship and since then he has had 50 articles published in professional journals in Australia and overseas. He has also written a book on mine warfare, edited two others on defence project management, has contributed to several books and is a contributing author to the *Australian Dictionary of Biography*. In 1993 he became the inaugural Rockwell Scholar in Strategic Studies and is currently Co-director of the Australian Defence Studies Centre's Industry and Logistics Program. In June 1996 he took up the inaugural Chief of Defence Force Scholarship.

REAR ADMIRAL SUMIHIKO KAWAMURA (JMSDF RETD) served for 35 years in the Japanese Maritime Self Defence Force. His naval experience included a posting as the Japanese Naval Attache to the USA; Head of Intelligence Division, Maritime Staff Office; Commander of Fleet Air Wings Four and Five and Vice Commandant of the Joint Staff College. He is a graduate of the National Defence and Joint Staff Colleges.

J.N. MAK is Director of Research at the Malaysian Institute of Maritime Affairs. He also heads the Institute's Centre for Maritime Security and Diplomacy. He has written widely on defence and naval strategy in the Asia-Pacific as well as on arms acquisitions and transfers.

CAPTAIN JACK MCCAFFRIE is the Director General, Maritime Studies Program in the RAN. An aviation sub-specialist (Observer) he spent the early part of his naval career flying in Grumman Trackers and Seaking helicopters. He is a graduate of the US Naval War College, holds a BA from the University of Queensland and an MA (Strategic Studies) from the ANU. He has also been a Visiting Associate at the Institute of Southeast Asian Studies, Singapore.

GARY PUNCH, MHR was, at the time of delivering his paper, the Minister for Defence Science and Personnel, but has since retired from federal politics, having held the seat of Barton in NSW since 1983. Other portfolios have included Arts and Territories (1988) and Telecommunications and Aviation Support (1988-89). He was Parliamentary Secretary to the Minister for Defence in 1993 and Chairman of the Public Accounts Committee from 1990. He holds a Bachelor of Commerce degree from the University of NSW.

CAPTAIN DAVID J. RAMSAY (RAN) was, at the time of delivering his paper, the Director of Surface and Aviation Plans and Coordination in Navy Office, Canberra. He subsequently commenced Indonesian language training before preparing to take up the position of Australian Naval Attache in Jakarta in late 1997. An aviation sub-specialist, he flew Skyhawk aircraft in the RAN and Sea Harriers while on exchange with the Royal Navy. He has also held positions as Commander (Air) at the RAN Air Station, Nowra, the Director of Sailors' Postings, and command of the Fleet unit HMAS SUCCESS and the shore establishment HMAS CRESWELL.

VICE ADMIRAL MIHIR ROY (INDIAN NAVY Retd), is an adviser on defence matters with Bharat Heavy Electrical Limited, India. He served for over 40 years in the Indian Navy, during which time he had operational sea commands of two air squadrons, destroyer and frigate squadrons and the aircraft carrier INS VIKRANT. As a Flag officer he held the positions of Commander Eastern Fleet and Commander in Chief Eastern Naval Command. He holds a Masters Degree in Economics and Political Science and is a graduate of the Royal College of Defence Studies, London.

REAR ADMIRAL JOHN F. SIGLER (USN) is the deputy Chief of Staff for Operations, Plans and Communications, CINCPACFLT. He has had over 30 years service in the USN, including commands of the US Ships REASONER and BELKNAP, Amphibious Group One and Amphibious Force, US Seventh Fleet. His naval experience also includes a range of staff appointments in policy and operational fields.

DR YOU JI is a lecturer in the Department of Political Science, University of Canterbury, NZ. He holds a BA from Beijing University, BA (Hons) and a PhD from the ANU and has been a Visiting Fellow at both the Strategic and Defence Studies Centre, ANU and the Australian Defence Studies Centre at the Australian Defence Force Academy. He writes widely on Chinese naval affairs.

CAPTAIN GEOFFREY WALPOLE (RAN) was at the time of delivering his paper the Director of Combat Force Development in the Force Development (Sea) Branch of HQADF. He subsequently assumed command of the warfare training establishment HMAS WATSON and in late 1996 was promoted to Commodore to take up the posting as Deputy Maritime Commander. His naval experience, spanning over 25 years, includes sub-specialization in communications and electronic warfare, a variety of staff appointments, as well as command of the Fleet units HMA Ships CANBERRA and PERTH. He is a graduate of the US Naval War College.

Introduction

Sea Power has traditionally been defined in terms of the maritime strength of a nation, and more often than not this strength was measured by the number of naval ships, guns, missiles, marines and aircraft that could be put to sea. However, such measures are becoming less reliable and relevant as technological developments and force multipliers make 'counting' capability much more complicated. Furthermore, international legal and political factors have changed the complexion of sea power as it is exercised at the close of the Twentieth Century and into the next.

Today, a nation's *sea power* comprises the maritime influence it exerts through a combination of military *and* non military means. This book looks at aspects of modern sea power in the Asia Pacific and speculates on how sea power is likely to evolve in the region during the first decade of the 21st Century. Specifically, its primary aim is to help provide insight into how navies and air forces in the Asia Pacific are likely to link maritime strategies, operations and force structures to national interests beyond 2000. Also, it aims to outline new technological and doctrinal developments that impact upon the development and exercise of modern sea power.

Due to major expansion in the maritime interests, activities and responsibilities of Asia Pacific countries, sea power has become an increasingly important instrument of national policy. Sea Power's role is bound to increase as national maritime estates become better regulated and defended by increasingly capable navies and air forces. Consequently, it is important to understand the nature and extent of factors affecting sea power so that the heavy and growing investment made in it can be used to best effect.

This book is divided into three parts:

* Part One offers perspectives of how sea power serves current and prospective national interests. It begins with an analysis by Dr Jan Breemer of the US Naval Postgraduate School of the changing context of maritime strategy. From there, experts representing various nations in the region examine factors affecting national maritime interests and developments. They cover anticipated economic/political changes likely to affect navies and their missions in the 21st Century.

* Part Two of this book looks at links between force structure and maritime operations in tomorrow's Asia Pacific. It presents technological and tactical developments that are likely to be employed in tomorrow's operations, and covers surface, air, submarine and amphibious dimensions.

* Part Three focuses on the theory, practice and potential of cooperative maritime missions that serve national interests, such as those related to surveillance, safety and peacekeeping, together with confidence and security building measures.

The main target 'audience' for this book is serving military personnel and representatives of forward looking industries that must keep abreast of strategic and technological factors affecting maritime operations and force structures in the longer term. The 'what navies will be doing, and what they will need to buy' core of the book provides valuable insights for industry.

Finally, the editors and producers of this book wish to thank the Australian Naval Institute, The Tenix Group, ADI Limited, STN Atlas and LOPAC Pty Limited for their generous assistance as sponsors of the conference from which much of the material for this book is derived. We also thank staff of the Australian Defence Studies Centre and the RAN Maritime Studies Program for their valuable efforts during production.

Jack McCaffrie and Alan Hinge

January 1998

Part One
Sea Power and National Interest

1 Sea Power in the New Century

JAN S. BREEMER

Sea Power: 'An occult term, eluding exact definition and perhaps meaning different things to different people'.
Fred T. Jane in *Heresies of Sea Power*, 1906.

AT a conference of naval historians three years ago, a British participant commented that no matter how uncertain the shape of the post-Cold War future, for the Royal Navy (RN) at least, the retreat of the Soviet naval menace meant a return to its 'proper business: fighting the French'.[1] Newspaper reports on Europe's 'fish wars' could tempt one to believe that the speaker might be uncomfortably close to the truth. For example, a few months afterward, a report in *The Times* in the Spring of 1993 headlined, 'French trawler seizes three Royal Navy men', related how a Royal Navy boarding party which had intercepted a French fishing vessel suspected of violating the Channel Islands fisheries limit, had been abducted and taken to Cherbourg. Later that same day, a group of French fishermen boarded a Royal Navy training vessel on a visit to Cherbourg, and burnt the White Ensign.[2]

No doubt, were they to be brought back to life, the great French privateering captains of the 18th century would be pleased to find that their descendants had not forgotten that they and the English were, to borrow the title of Jeremy Black's book, 'natural and necessary enemies'.[3] There are indeed those who have proposed that the collapse of bipolarity will take European politics 'back to the future'; the internecine war in the former Yugoslavia can be cited as the first symptom of Europe's reversion to the 'old ways'. Nevertheless, we can safely predict that, whatever the shape and role of sea power in the next century, it will not feature a repeat performance of Trafalgar.

There are two other, broader, reasons why sea power in the next century is not likely to feature a Trafalgar-like clash between great fleets. These will be elaborated on later, but will be cited at this point, to stimulate your interest. First, the French and British navies, as also the fleets of the Euro-Atlantic region as a whole, will, come the next century, be structured and equipped primarily for power projection tasks from the sea. Sea control, the traditional function of so-called 'blue water' navies, will be relegated to a secondary, supporting task. Secondly, two decades or so hence, neither the French or the British navy, nor for

that matter, any of Europe's navies will very likely retain the ability to go to war independently. In late April this year, British foreign secretary, Douglas Hurd, reiterated his country's familiar argument against a so-called 'European army'. 'Decisions about military engagements', he said, 'are decisions about the lives of sovereign governments. They can only be taken by sovereign governments'.[4]

Amen. But, the comment made by the Belgian defence minister a few weeks later is probably closer to the mark. 'The time is nor far off', said minister Leo Delcroix, 'that it will be utopian, especially for small nations, to maintain independent armies, navies, and air forces'.[5] The occasion for this announcement was Belgium's decision, effectively, to place its fleet under the daily operational control of the Royal Netherlands Navy. The point is that, with or without formal agreement on a common European security and defence policy, institutional politics, budgets, and a declining defence industry market will drive Europe's navies increasingly toward 'multinationality' and, as a corollary, a de-nationalisation of sea power. This will be addressed in more detail later, but first a couple of definitions.

DEFINITIONS

First, a very restricted definition of 'sea power' will be used. Although some purists will object, for the purpose of this presentation the discussion will be limited to the military dimension of sea power. This is concerned not solely with naval power, that is to say, platforms and weapons that move on, under, or over the surface of the oceans and that are painted in battleship grey. The military dimension of sea power is concerned with the military ability to use the seas to influence events at sea and on land. The emphasis here is particularly on the adjective 'military', for the fact of the matter is that the meaning of sea power can no longer be restricted to things that float. One century ago, only navies, that is 'grey hulls' could engage in the contest for security at sea; conversely, navies, no matter how powerful, could not, in Winston Churchill's words on the eve of The First World War, endanger a single continental hamlet.[6] This was the monopoly of armies.

By the same token, of course, as long as they were confined to terra firma, not even the most powerful divisions could menace the safety of shipping at sea. This division of labor has ended, of course, thanks, first to the invention of the aircraft, and later the guided missile. The current edition of *Jane's Fighting Ships* makes the point in a small way. Traditionally a good bellwether of technological change in the nature of sea power, this year's Jane's included, for the first time in its nearly one hundred year publishing history, land-based antiship missiles in its annual tally.

This is merely the tip of the iceberg: thanks to technology, it will become increasingly difficult to speak of 'sea power' as a separate and distinct form of military power generally. The boundaries between the capabilities to exert military violence on land, at sea, or in the air, will become progressively diffuse. Ships at sea will be susceptible to attack by land-based force at progressively greater stand-off range, and conversely, technology will give seagoing platforms the ability to project power directly against the landmass from vastly increased distances. The key will be, of course, the creation of overarching information-based systems-surveillance, reconnaissance, and targeting.

One strategic implication will be a fusion of 'sea control' and 'land control'. Sea power has historically been preoccupied with sea control; that is the ability to use the seas for one's own purposes, while denying its use to the opponent. Rarely a goal in itself, sea control enabled its possessor next, to project power against the landmass, whether by way of amphibious invasion, air or missile strikes, gun bombardment or blockade. Operationally, however, sea control meant destroying or at least neutralising the enemy's seagoing capabilities. Already today, but progressively more so in the next century, seagoing forces wishing to operate in a safe ocean environment will have to contend with land-based threat systems first. This may well be what Rear-Admiral Blackham of the Royal Navy meant when he announced in a recent address that, 'We now stand on the threshold of a key shift from the tradition of strategic enablement to a focus on the operational level of war'.[7]

The second definition concerns how far we should attempt to peek into the next century. There are two 'safe' options, of course. The first involves looking only five years ahead. However, only a modern-day millenarian would expect that sea power in the year 2000 will look very different from what it is today. The other choice is to prognosticate about events one century hence. The advantage of the latter choice is that there will be no accountability for even the wildest predictions! The disadvantage is that I would immediately lose all credibility. A reasonable compromise would be to look through a 'glass darkly' and consider apparent trends over the next 20 years or so. The word 'trends ' is important. It means that a forecast can make sense only if it is limited to what is reasonably foreseeable, albeit faintly. Undoubtedly, the recent events in the former Soviet Union and Eastern Europe have taught us to guard against straight-line predictions. However, we simply do not have the capacity to plan on the basis of the unforeseeable. Indeed, planning for the future is an impossibility if we assume a random, completely patternless world. So what are the trends that will shape sea power in the next quarter century or so?

THE EURO-ATLANTIC REGION: THE END OF NAVAL STRATEGY

A couple of themes have already been touched on. First, barring the emergence of a peer superpower competitor, seapower in the Euro-Atlantic region will return to its roots. That is to say, the centre of gravity for the uses and usefulness of military power at sea in the Euro-Atlantic area will return to the land. Early in this century, the great British navalist, Julian S. Corbett, cautioned the professional naval officer that, 'If ... it is possible to give sudden emphasis to vital military operations by momentarily and without due risk abandoning the sailor's preoccupation – by ceasing for a moment to aim solely at command of the sea – a bigoted adherence to it may become pedantry and ruin the higher strategy of the campaign'.[8] Corbett's advice was wise then; it is a truism today – certainly so for the blue water navies of Europe and the United States.

The era of blue water naval campaigning, interspersed by (short-lived) combined operations, is gone. Thanks to the demise of the Soviet Union and its fleet, and with no nation or coalition of nations standing in the wings to again imperil the oceanic sea lines of communications, oceanic sea control has become a Western given. As a result, land control, not sea control, will be the strategic rule. This does not mean that even the most powerful navy in the world, the US Navy, will not find its ability to use the seas threatened at times. There will, no doubt, be situations in which a combination of sea-and-land-based weapons will challenge the ability of the American Navy to project power ashore. There will be a continuing demand for the ability to secure and maintain sea control in regional waters. Associated tasks, however, will be fully subordinate to the primacy of land control.

The US Navy has begun the transition; anti-submarine helicopters are being re-fitted with anti-tank weapons; the Arleigh Burke class destroyers will be re-equipped with anti-tank helicopters; attack submarines may be armed with the US Army's Tactical Missile System (ATACMS); Aegis radar-equipped ships will be modified to contend with ballistic missiles aimed against land targets; and American submarine planners are even proposing to convert a few nuclear powered ballistic missile submarines (SSBN) to large troop carriers. After initial scepticism, Western Europe's blue water navies have begun to follow suit. The Royal Navy now stresses its 'core capabilities', that is land attack-capable platforms, such as amphibious ships, Tomahawk-firing attack submarines, and aircraft carriers. Destroyers and frigates have become 'also rans'. The same trend is becoming apparent for the French Navy; the Dutch are building their first amphibious transport ship .

An oft-asked question is, but what about the future? While it may be true that there is no potent challenger for oceanic security today, does not history tell us

that this can only be a passing episode? And do not the United States and its European allies therefore risk being caught unprepared? It is certainly historically true that nations have responded to seaborne threats to their security by building a countervailing seaborne capability. Thus, the Spartans countered Athenian sea power by building their own fleet; so did the Romans when they confronted the Carthaginians; and in this century the growth of Soviet naval power can be attributed, in good part, to the perceived seaborne threat of the American strike carriers.

Yes, another challenger for oceanic security may arise. But were this to happen at all, it is unlikely to be within the next 25 years or so. The reason is simple: barring a far more dramatic decline of Euro-Atlantic sea power than even the worst pessimists anticipate, no nation, or combination of nations, can in the foreseeable future, conceivably build a seagoing order of battle to match that of the Americans, let alone of the Americans and Europeans combined. But what about the period beyond about 25 years from now? By the middle of the next century, the face of seapower will probably be dramatically different from what it is today. Large volume cargoes will still be carried by ocean-going shipping. For this and other reasons (for example the proliferation of structures for the exploitation of oceanbed resources), security at sea will remain a critical concern for naval planners. However, with advances in space and airborne technologies, for example 'supercruisers' with an endurance measured in days instead of hours, a future campaign for oceanic security could well largely be fought in the air.

Again, the end of what one of Corbett's contemporaries, Admiral Philip Colomb, called 'true naval war', that is war between fleets for command of the 'great common', will have particularly telling implications for the use of sea power by the Euro-Atlantic navies. Whether or not this shift will affect the make-up of sea power on this Asian-Pacific side of the globe will be touched on shortly. First, however, there is a need to consider one other major trend which could shape the future of Europe's navies in particular.

EUROPEAN NAVAL POWER AND 'CREEPING INTEGRATION'.[9]

Next year, the member states of the European Union (EU) will gather at an Intergovernmental Conference (IGC) to review the Maastricht Treaty, notably the Treaty's Article 4 which calls for the development of a Common Foreign and Security Policy (CFSP) and a Common European Defence Policy (CEDP). At issue in particular will be whether the Western European Union (WEU) should be fully integrated into the EU as the organisation's common military arm, or whether it should remain a separate 'pillar'. The potential outcome is by no means

clear, but the IGC is likely to lead to some institutionalised form of further integration of the WEU in the EU. If so, form will catch up with substance. The fact of the matter is that, even while 'Euro-sceptics' have been busy denouncing a common European defence as the pipedream of a 'gaggle' of people 'with no inkling of real military capabilities', Western Europe's military have slowly, almost imperceptibly, embarked on a multinational entangling process that, for lack of a better phrase, can be called 'creeping integration'.

The recent Belgian-Dutch decision to integrate the navies of the two nations has already been cited. Decision-makers on both sides insist that ultimate command of each nation's ships will remain with the national governments. Nevertheless, the effective result, for Belgium at least, will be the demise of its fleet as an independent tool of national policy. This is admittedly an extreme example of the current trend toward the 'de-nationalisation' of European naval power, but the seeds are germinating throughout the patchwork of 'multinational cooperation' schemes that has been created since the fall of the Berlin Wall. One would like to think that common strategic interests and risks propel nations to pool their military forces. In reality, the driving forces behind Europe's multinationalisation today are escalating costs, force reductions, the political appeal to domestic audiences, and by no means least, the difficulty of justifying military forces for national needs.

Four years ago then-French foreign minister Roland Dumas criticised the North Atlantic Treaty Organisation's (NATO) decision to create a Rapid Reaction Force (RRF) for its lack of clear strategic reasoning: 'Logic would require that one first define the political objectives, then that one work out the strategy, before deciding on force structures. 'Instead', Dumas went on, 'NATO has chosen the opposite path'.[10] Europe's military forces, including seagoing components, are still very much following this path. As deployable assets continue to shrink, Europe's armies, navies, and air forces have been rushing to create a series of interlocking bilateral and multilateral arrangements in the areas of procurement, training, maintenance, and operations that, Europe's political leadership will discover before long, have made 'common defence' the de facto state of affairs.

This is not necessarily a bad thing if it is underwritten by a consensus on political and strategic goals. The problem is that so far it is not; even though the Europeans, including the British, have recognised that future large-scale military, including naval operations, will almost certainly be fought in a multinational context. The insistence that the decision to use military force must remain a national prerogative, when compared with the admission that no war of consequence can be undertaken without partners, produces an interesting paradox: it says that the sovereign decision to use military force is limited to the decision

whether or not to participate in a multinational endeavour. Put in different words, the future efficacy of Europe's national naval forces will depend on others, yet, short of de jure integration, no one will be able to count on others before the chips are down.

THE ASIA-PACIFIC REGION

So much for expectations about the direction for sea power in the Euro-Atlantic half of the globe. What about the Asia-Pacific region? When the 'end of naval strategy' was first proposed a couple of years ago, commentators such as Sam Bateman in Australia protested that this might be true for the Americans, but that in Australia's region Mahan was still very much alive and well. These protests were not meant literally, in the sense that great Jutland-style sea battles for command of the oceans should be expected. Rather, they sought to emphasise (correctly) that the safety of the sea lines of communications, sea control in other words, will remain the central preoccupation of sea power in the Asia-Pacific region.

There are at least two reasons why sea power in the Asia-Pacific region will continue to evolve along more or less 'traditional' lines and why, for the foreseeable future at least, regional navies are unlikely to embrace the 'from-the-sea' vision which is re-shaping the fleets of the Euro-Atlantic region. The fundamental reason is that strategic conditions in this part of the world are very different. The navies of the Euro-Atlantic region can afford to reduce the priority of oceanic sea control not only because the Soviet seagoing menace has vanished, but even more important for the future, because none of the region's nations anticipate that their relations will deteriorate to the point of armed conflict, including conflict for control of the seas. Alliance or no alliance, a transatlantic 'security community' exists in fact.

Unfortunately, no such community exists in the Asia-Pacific region. On the contrary, rivalries, tensions, and uncertainties about long-term intentions abound. And while these persist, the dynamics of the traditional 'security dilemma' will tend to shape the region's military choices. The result has been a great deal of what Malaysian analyst J.N. Mak has called 'contingency planning' or 'uncertainty-based planning': the perceived necessity to guard against all eventualities.[11] Barring much greater 'openness', the regional states will feel compelled to hedge against insecurity at sea, and accordingly to invest in sea-securing resources.

It is also important to recall that, compared with the Euro-Atlantic region, most Asian-Pacific navies are in a very different stage of development; most are

still 'emerging' navies. Most nations in the region have enjoyed independence for less than 50 years, during most of which time, the dominant security requirement for most countries was the consolidation of central authority at home. This called for national militias; (expensive) navies being very much a secondary consideration. The emergence of 'modern' sea power in the region can be dated back only two decades or so, when the so-called 'Third World' nations began to acquire state-of-the-art seagoing platforms and weapons in place of superpower cast-offs. Various authors have advanced a number of reasons why seagoing security began to feature more prominently in the defence calculations of the region's states in the early-to mid-1970s. One reason for it was the third United Nations Conference on the Law of the Sea (UNCLOS) which opened its deliberations in 1973. UNCLOS was fully expected to (and did) produce a new ocean order, featuring vastly expanded national jurisdiction over (and responsibilities for) the off-shore seas and their resources. Another reason was that in the early 1970s Pacific Asia 'took off' to become, in the words of a recent report of the East-West Center, a 'major dynamo of global growth'.[12] Economic growth meant trade, and trade meant shipping. The region's growing affluence made expensive seagoing weapons systems more affordable: the heightened importance of the region's sea lines of communications made acquiring those systems a priority.

Let me suggest one more reason why the birth of modern seapower in the region occurred when it did. That reason is *technology*. The 1970s were the heyday of the small, 200-ton or so, missile boat. Hailed as sea power's new equaliser, the craft promised a quick way to acquire a lot of firepower in a small package without having to invest in the kind of expensive logistical and training infrastructure which 'traditional' combatants demanded. Between 1972 and 1979, some 50 missile boats were commissioned into the navies of Indonesia, Malaysia, Singapore, South Korea, Taiwan, and Thailand.

The missile boat has been, in a sense, a 'learning tool' for Asia-Pacific's new-found practitioners of seapower. Reasonably quickly they learned that a missile boat with a displacement of some 200 tons was an extremely limited platform. Essentially a seaborne 'interceptor' with limited endurance, it was not well suited for the kind of broad surveillance and extended patrol operations that the vastly expanded areas of oceanic jurisdiction demanded. Also, because of its small size, the missile boat was basically a one-shot weapon; once it had fired its limited payload, it had no means to defend itself. By the late 1970s, the initial 'missile shock' had worn off; the large 'conventional' warship had regained the upper hand thanks to its ability to carry larger, longer range missiles, the addition of rapid-fire self-defence guns, and the incorporation of sophisticated electronic support and countermeasures systems. As a result, the popularity of the single-purpose missile boat has waned, and navies, including those of the Asia-Pacific

region, have begun to 'upgrade' their flotillas with corvette or frigate-sise combatants.

The ability of most Asia-Pacific nations to provide and sustain a credible military 'presence' at sea remains in its infancy. This is another reason why, besides the already mentioned dynamics of the security dilemma, the next century will almost certainly see a continuing evolution of the region's navies toward 'balanced' sea securing capabilities. Aviation-capable and at-sea logistics support vessels will likely figure prominently in future acquisition programs. So will submarines and, as a corollary, anti-submarine warfare capabilities. The point is that, whether or not the United States continues to provide a 'stabilising' presence, the combination of 'legitimate' requirements and 'hedging' options will almost certainly propel a further build-up of regional sea control capabilities .

THE AMERICAN PRESENCE: A CRITICAL UNCERTAINTY?

Since the issue of the American presence in the region has been mentioned some comments on it are necessary. To begin with, political-military decision-makers in the Asia-Pacific region must necessarily treat the longevity of the US Navy's forward deployment in the area as a critical uncertainty in their planning efforts. Use of the term 'critical uncertainty' is not meant to suggest that the future of the US Navy's presence in the region is uncertain *per se*, although that does depend on how far into the future one looks. The main issue is the critical significance of the US presence (or absence) for regional planning purposes. For example, most current military and naval planning in the region is implicitly based on the assumption that US forces will remain part of the region's military landscape. Prudent strategic decision-making dictates that this assumption be recognised *explicitly* for its implications, and that *alternative futures*, based on a *different set of assumptions*, be examined. Only in this way can the planner hedge against 'future shock'. So, what about the future of the American presence?

In the first place, there can be no question that, *for the foreseeable future*, the United States will remain strategically engaged in the region and that it will continue to underscore this engagement with a significant military presence. Indeed, the recently concluded CARAT '95 (Cooperation Afloat Readiness and Training program) series of bilateral naval exercises with Singapore, Malaysia, Brunei, the Philippines, and Thailand suggests that the United States is eager to *strengthen* its contribution to regional security. It is also important to keep in mind that the US Navy has identified 'forward presence' as one of the seven so-called Joint Mission Areas (JMAs) that are at the heart of the service's current resource allocation process. In other words, the US Navy has a vested institutional (or budgetary) interest in a robust overseas presence.

Nevertheless, it is important to recognise the critical uncertainty that is part and parcel of the current emphasis on forward deployment in US Navy planning. That critical uncertainty concerns the fact that forward deployment, presence if you prefer, is a *political choice*. It is not an immutable 'principle of war' which, if not obeyed, will necessarily bring disaster. It is the way that the present Administration has decided the American military can best underwrite alliances, deter war, defuse local crises, and generally bolster mutual confidence and understanding. It is also a choice that a future occupant of the White House can reverse!

This brings us back to the Euro-Atlantic portion of the world. Should declining fleet and funding levels force a re-evaluation of the US Navy's presence activities, the 'hub' most likely to be affected will be the Mediterranean Sea, the 'home' of the Sixth Fleet. The first reason for suggesting this is that the end of the Cold War has obviated the Sixth Fleet's principal strategic rationale, as guarantor of NATO's exposed southern flank. Secondly, the retreat of the Soviet naval menace to the Atlantic sea lines of communication (SLOC) has made it possible for European naval power to 'return' to the Mediterranean. The war in the former Yugoslavia may have been the immediate cause for the Germans, Dutch, and British among others, to dispatch their warships, but strong institutional motivations are at work which will almost certainly ensure that Europe's navies will be in the Mediterranean for the long haul .

CONCLUSION

In a recent article, Geoffrey Till suggested that defining requirements has perhaps become the most difficult task facing naval planners today. Short of clearcut national guidance in many instances, planners in both East and West, he said, are having to go 'back to basics'.[13] The problem is that it is not always clear what those 'basics' still are. Indeed, Till himself proposed that the naval planner's most basic question; why have a navy and what should it do? may 'take different forms in different parts of the world'.[14] This presentation has sought to make the point that, as seapower moves into the next century, at least some of the 'basics' for naval planning will differ greatly between East and West.

Part of the reason lies with the different impact the end of the Cold War has had on regional security. This impact has been far greater in the Euro-Atlantic area than in the Asia-Pacific arena, for the simple reason that the Cold War was the defining security paradigm for the Euro-Atlantic allies. It was in the West that the two superpowers had created their principal opposing alliance systems, where they had concentrated the bulk of their military strength, and had focused their contingency planning. The Europeans and the Americans shared a common

perception of the threat. The same degree of Cold War-generated common interests and common risks did not exist in this part of the world.

Given this single-minded preoccupation with the erstwhile Soviet menace, its collapse has necessarily forced American and European naval planners to embark on a wholesale re-assessment of the 'whys' and 'what fors' of power at sea. This re-assessment has proceeded on the assumption that the security environment at sea will be far more benign than it has been since the beginning of the century. This has produced two 'basic' conclusions in turn: first, that forces can be cut considerably, and secondly, that the remaining forces ought to take on new, 'littoral' responsibilities.

Because bipolarity has never dominated the Asia-Pacific security equation to the same extent that it has in the West, its demise also has had much less impact. Indeed, it can be argued that, if the end of the Cold War has affected security calculations in the region at all, it has done so in a *negative* way. Accordingly, there has been little pressure in this part of the world to re-examine the 'basics' of military power at sea. It is assumed that, with or without bipolarity, or with or without a US Navy presence, security in the region will be an uncertain commodity, that it will be conditioned by the prevailing 'balance of power' rather than 'regionalism', and that therefore military and naval planning will be dominated by uncertainty and *insecurity*. Hence the emphasis, to repeat J.N Mak, on 'contingency planning'.

No one knows what future regional contingencies will look like: few of the region's naval planners are likely to be prepared to spell out in detail which 'enemy' they believe they must prepare their forces to fight. Hence, and unlike the situation on the other side of the globe, there is no persuasive reason to engage in 'zero-based' planning – naval forces in the Asia-Pacific area will grow in an *evolutionary* fashion.

Notes

1. Rear Admiral Guy F. Liardet, RN, 'Trend and Change'. James Goldrick and John B. Hattendorf, *Mahan is Not Enough*, Newport, Naval War College Press: 1993. p. 117. Proceedings of a Conference on the works of Sir Julian Corbett and Sir Herbert Richmond, Naval War College, Newport, RI. 28-29 September 1992.
2. Michael Horsnell, 'French trawler seizes three Royal Navy men', *The Times* (London), 29 March 1993.
3. Jeremy Black, *Natural and Necessary Enemies: Anglo-French Relations in the Eighteenth Century*, Athens: University of Georgia Press, 1986.
4. Bruce Clark, 'Hurd rejects idea of European army', *Financial Times* (London), 1 March 1995.
5. Peter de Graaf and Wio Joustra, 'Nederland en België voegen marines samen' (The Netherlands and Belgium Join Navies'), *Volksrant*, 27 April 1995.
6. Winston S. Churchill, *The World Crisis, 1911-1918*, Vol. 1, London: Oldhams Press, 1938. p. 76.
7. Rear Admiral J.J. Blackham, RN, 'The Shape of the Royal Navy in the Twenty First Century', *Naval Review*, July 1995. p. 191. The author received written permission to cite this passage.
8. Julian S. Corbett, *England in the Mediterranean*, Vol. II, London: Longmans, Green and Co. p. 76.
9. Jonathan Eyal, 'Defend the nation first', *The Times* (London), 16 May 1995.
10. Ian Davidson, 'Dumas takes aim at new NATO force', *Financial Times* (London), 5 June 1991.
11. J.N. Mak, 'The ASEAN Military Build-Up: Contingency Planning in an Uncertain World', Paper presented at the Sea Power Conference, London, 5-6 May 1994.
12. Richard W. Baker, 'Sweeping Changes Shape a New Pacific Asia', *Asia Pacific Issues*, No. 24, Honolulu: East-West Centre, September 1995.
13. Geoffrey Till, 'Maritime Strategy and the Twenty-First Century' in Geoffrey Till, ed., *Seapower: Theory and Practice*, London: Frank Cass, 1994. p. 176.
14. *ibid.*

2 The Chinese Navy and National Interest

YOU JI

IN Asia and the Pacific the end of the Cold War has stimulated a naval build-up. Partly, this is the result of protracted economic growth which allows regional countries to inject more national resources for fast expansion. Partly, this also reflects their changed threat perception in the new era. They now reorient their defence efforts towards self-reliance in anticipation of a power vacuum, whether it is real or imagined. And they devote more resources in acquiring high technology weapons, an indication that they have shifted their defence priority from internal to external (territorial) concerns.

In the new century there will be a qualitative development of naval power in Asia and the Pacific. With a background of unresolved flashpoints, the Spratlys for example, and an unchecked naval arms race *vis-a-vis* a lack of confidence building measures (CBM) in the region, we are facing a mounting security challenge: will the new century repeat the history of the last, when the naval races of major powers only helped to trigger world wars?

This question may sound too sensational to be realistic. But we must take precautions. While national interests push a new round of naval build-ups, interests clash as each country pursues them. Conflict in interest-seeking should not become irreconcilable, but common security can be a reality only if all countries coordinate their pursuits and discipline their naval development. This chapter is an attempt to analyse how the Chinese Navy sees the relationship of its build-up to the national interest.

A FORWARD LOOKING NAVY

At the time of writing this chapter, the Chinese military is initiating its own discussion about meeting the challenge of the new century to its naval modernisation. The significance of the People's Liberation Army's (PLA) discussion can be understood as an attempt to embrace the new ideas of the information age which have driven the naval development of major powers. Traditionally, the

Navy, like other services of the PLA, was characterised as slow in transforming its mind-set once it was set on a particular war doctrine.[1] Since 1992, when the PLA effected a fundamental shift in its defence strategy, from Deng Xiaoping's 'people's war under modern conditions' to a post-Deng one of 'preparation for modern warfare under hi-tech conditions',[2] the PLA has demonstrated an extraordinarily ideology-free adaptation of the latest Western military thinking.

In fact, the Navy has spearheaded this learning campaign and as a result, it has become more open-minded to advanced naval concepts and more future oriented in designing its objectives and plans. So, it is very important to have a grasp of what the Chinese naval commanders think of sea warfare in the 21st century. For them, an understanding of new ideas of naval warfare is crucial in their efforts to bridge the gap with advanced navies, as the new and correct military thinking can help re-set the direction of war preparation.[3] For us, this can shed light on the long-term development orientation of a navy riding on fast economic growth.

A land-air-sea-space doctrine. Chinese naval planners foresee that maritime warfare in the next century will extend from two dimensions, air and sea, to multiple dimensions including land and space. Long range land-and-space-based weapons will be available to attack directly targets at sea. Without a space-based C3I system, it will be difficult to achieve victory in even tactical battles. On the other hand, the technological breakthroughs will allow surface combatants to further expand manoeuvrability, and allow submarines to submerge in deeper waters. The lines of separation between defence and offence will be pushed to the point where they become meaningless. So, the People's Liberation Army-Navy (PLA-N) is studying a land-air-sea-space doctrine as a guide for its development in the new century.

'Beyond vision' warfare. During the 21st century, nuclear technology will become mature, enabling major combatants to grow larger in size as weapon delivery platforms, and to move faster for rapid response. Consequently, the traditional way of maritime warfare will be revolutionised to the extent that long range and beyond vision battles will be the main form of engagement. And, because long range attack is enhanced by fire power, the campaign objectives will be achievable through tactical sea actions. So, the trend is that sea warfare will be short in duration, small in scale but high in intensity. Particularly threatening will be the enhanced lethal power of the first strike.

Cruelty of the 'soft kill'. High-technology weaponry will dominate sea battles in the 21st century. One visible departure from traditional warfare will be general application of 'soft kill', not least through micro-electronics which accord high

levels of 'artificial intelligence' to weapon systems. Simultaneously, sophisticated stealth material will be widely applied in naval vessels. In particular, precision-guided missiles will automatically seek their own targets. Thus the goal of 'discovery amounts to destruction' will be truly realised. Similar to the control of air and sea, control of electronic warfare will play a decisive role. Major actions will increasingly become programmed and digitised. One navy may well be destroyed before the real engagement even gets started, as its C3I system is paralysed through electronic warfare. So, future weapons systems must be conceived against the characteristics of the information age.

Crack force structure. In the 21st century the high technology nature of naval warfare will also dictate major alterations to the structure of a navy. Surprise actions and rapid response will require substantial streamlining of command systems and will see the move of land-based headquarters into major surface combatants. New components, such as naval space command and electronic warfare units, will acquire a key place in the navy, while many traditional branches will be either de-emphasised or abolished. The structure as a whole will be leaner, but the demand for very capable people will be higher.[4]

In sum, towards the end of this century, the Chinese military has positioned itself to meet the challenge of the next century. Its navy, in particular, has become more forward looking. This is crucial for the absorption of new strategies, technologies and ideas. Looking forward will force the navy to catch up with the advanced navies in the world. Indeed, in the new century high-technology warfare will be driven by information warfare. As one PLA general pointed out:

> In the future, warfare will be directed and dictated by information warfare. In contrast, our armed forces are still left behind in the industrial age that dominates the strategy, tactics, equipment and overall military thinking. From now on we must recognise the new development trend, spearheaded by information technology and use it as a catalyst for the PLA's modernisation.[5]

A FORWARD-DEPLOYED NAVY

In the 1980s, the strategic emphasis of the PLA was on limited regional wars. Now this has been recognised as inadequate to provide a comprehensive modernisation program for the military of a big country like China. Such defence guidance reflected the PLA's failure to identify a clear target on which to focus military research and development. Regional concerns only confused the PLA's long-term development horizon. One outcome of this confusion was a constant decline in the military budget. In effect, the military became a dependent, rather

than an independent, variable in the country's overall strategy, as it was ordered by Deng to exercise 'self constraints'.[6]

Coming into the 1990s, regional wars have increasingly become unfightable for China, which is pushing a new 'periphery strategy' to befriend its neighbours. This is crucial for China, to avoid two-front battle possibilities under growing Western pressure. Preparation for limited wars, as a defence guide and a research and development priority, makes sense only if they mean high-technology wars. This again orients the PLA towards major powers.[7]

Although China still believes that the prospects of a major war are remote, the post-Cold War multipolarity in Asia-Pacific worries the PLA's war planners, who see a precarious security environment for China. The collapse of the Union of Soviet Socialist Republics (USSR) allows the United States of America (US) to indulge the idea of containment against China.[8] As Deng pointed out, 'The group of seven's (G-7) decision to impose sanctions on China reminded me of the eight-power invasion on [sic] China in 1900'.[9] Therefore, the significance of adopting a high-technology oriented defence strategy was the creation of a realistic defence objective, against which the PLA could adjust its war tactics and force structure.

This objective, at the global level, aims at reaching the new frontier of world weapons technology and at comprehending the specific war doctrines of major powers.[10] However, it does not identify any particular country as its foe. The belief is that once the PLA is equipped with the best weapons and sound strategies, it can deal with any crises. At the regional level, the objective focuses on preparation for flashpoint conflicts that may implicate China.

This is considered especially in relation to likely US military intervention. For instance, an invasion across the Taiwan Strait would have to factor in a possible US involvement. In the South China Sea, a PLA contingency response to any military action, be it caused by oil extraction or fishing boat detention, must specify how to cope with possible US support for China's adversaries. The PLA planners have realised that as most countries in Asia are acquiring high-technology weapons, even future regional conflicts will bear the characteristics of a high-technology war, and the PLA must adjust to such a reality.[11] Geographically, the PLA will have to expand, qualitatively, defence depth on land, air and at sea; for high-technology increasingly blurs the boundaries between offensive and defensive weapons.[12] One may thus expect to find the PLA's defence posture increasingly forward-deployed.

The PLA's strategic change has greatly augmented the importance of the Navy in its push for new frontiers in defence. More importantly, it rekindled the recognition that, in dealing with maritime conflicts, a navy has to acquire capabilities of long range power projection. Gradually, this recognition has been

translated into a complete set of new naval theories, including blue water training, blue water combat tactics and blue water weapons programs.

Since the 1980s the PLA-N has been developing under an active green water defence strategy (*Jiji de jinhai fangyu zhanlie*).[13] Firstly, the strategy accords the Navy the status of an independent force, assuming strategic and campaign objectives.[14] Secondly, the strategy emphasises long-range power projection and high manoeuvrability of naval fleets. Geographically, the concept of *jinhai* embraced the Chinese waters adjacent to Vladivostok in the north, and to the Malacca Strait in the south, and continued to the first island chain of the West Pacific in the east. This covers a vast area of the Pacific, incorporating Japan, the Liuqiu Islands and the Philippines. One commander observed that the Navy must project a sea control capability beyond the second chain of islands.[15] Thirdly, this active strategy aims at ultimate deterrence of the big powers. One Chinese military strategist pointed out:

> Given the strategic interests of the US and USSR in this region (the West Pacific), the presence and growth of our navy should create more strategic pressure. Therefore, the two superpowers will not be able to do whatever they want with no regard to our country.[16]

NAVAL RESTRUCTURING AND EXPANSION

This desired higher level of deterrence showed China's resolve to attain a force status that could win it the respect of the big powers.

The PLA-N's quest for high-technology based power is ambitious. By the early 21st century, it is set to achieve a relatively large radius of action, reaching beyond the first island chain of the South China Sea. To this end, according to Rear Admiral Cheng Ming, the head of the Navy's equipment department, the development of new generations of major surface combatants, larger submarines and long-range aircraft will be the priority in the years to come.[17] The major surface combatants and submarines are the mainstay of the PLA-N's ocean-going fleet. It is in the midst of a generational change, both in ship design and weapons upgrading. Since the late 1980s, a number of new DDGs and frigates (FF) have entered service, including one destroyer of the Zhanjiang Class, which displaces 4,200 tons, and five each of three new types of frigates. These frigates are designed to enhance the Navy's anti-air and anti-submarine capabilities.

The Navy continues to place development of its submarine fleet as a top priority. At the tactical level, it believes that its submarines can help achieve some combat edge over neighbouring countries which do not possess sophisticated ASW capabilities. At the strategic level, its nuclear submarine fleet is regarded as China's most reliable second strike deterrent. So, the plan to modernise the

Navy's submarines has a dual focus; inventing new models of conventional submarines and expanding the nuclear submarine fleet. For the former, the new designs which have been put on trial since 1990 have much larger displacement and are quieter than the Romeo Class. For the latter, the 09 Class will include over a dozen craft early next century, as the number of nuclear submarines is to comprise a higher proportion of major warships.[18] Meanwhile, to overcome the transitional difficulties of a lack of advanced conventional submarines, the Navy has purchased four Russian Kilo Class submarines as a 'quick fix'.

These new destroyers, frigates and submarines are meant to fulfil two missions of force restructuring of the 21st century:

a. Specialisation. New warships cater for different tasks required by deep ocean combat missions, and potentially by the formation of aircraft carrier groups;

b. Numbers of ocean-going combatants. The Navy is to equip its three fleets with sufficient warships. The objective is to allow each fleet to conduct independent warfare at certain levels, so as to avoid trading off strength in key strategic directions. Numbers also make up for the inadequacy of weapons.[19]

The naval restructuring has been under way since the beginning of the 1990s, although the pace is painfully slow. The root-cause is apparent: the PLA-N cannot produce the number of satisfactory warships and aircraft required for an overhaul of its obsolete fleets. This problem is particularly acute for naval aviation, which has tried hard to eliminate its J-6s, but can find no replacement. J-8IIs are not up to the standards needed for high-technology warfare.

It will be years before the ideal types of aircraft become available. However, the Navy did mothball an increasingly large number of warships not capable of blue water operations. It has retired four destroyers and five frigates of Second World War technology. The number of conventional submarines has been almost halved. At the same time, small attack vessels are no longer regarded as very useful and will be gradually reduced in proportion to ocean going warships.

The real leap forward for the PLA-N, to acquire blue water power in the new century, can be realised only when it possesses aircraft carriers, a dream of several generations of Chinese seamen. The Navy calculated that if it had a carrier with 40 aircraft on board, it could achieve the combat effectiveness of 200 to 800 coastal-based fighters in air support functions. Further, the sea area under control of a convoy headed by a carrier would be fifty times as large as that controlled by a convoy of destroyers.[20]

Special efforts have also been devoted to research and development for aircraft carrier battle groups in the last few years,[21] although China officially denied the existence of such a plan. Indeed, naval officers never cast any doubt over such a plan. Their confidence was mirrored by the Chinese diplomats attending the 9th Asia-Pacific Round Table in June 1995, in Kuala Lumpur. They conveyed the impression that it was only a matter of time before China possessed these ships.

In fact, the naval research institutes have continued feasibility studies of a carrier since the project was launched as early as 15 years ago. In April 1987, the Naval Air Force (NAF) conducted the first take-off and landing trial on a simulated deck, at a naval base in North China. Since then, several dozen pilots have been trained intensively on the deck. The research and development work on carriers has been accelerating in recent years. In November 1990, a model of China's first generation carrier was displayed at a highly classified weaponry exhibition in Beijing.

According to the information available about the display, the carrier had a displacement of 40,000-50,000 tons, and carried 20 fixed-wing aircraft on deck and another 20 in the hangar. The deck was over 70 metres in length and made use of catapults and arrester wires. This design was highly praised by Admiral Liu Huaqing. The Navy has reportedly planned to establish two battle groups centred on such carriers in the early years of the 21st century.[22] As far as the design is concerned, this is a generational leap from the Navy's initial consideration which envisaged a lighter carrier with only short take off and vertical landing (STOVL) aircraft on board.[23]

TOWARDS THE NEW CENTURY: A DANGEROUS TRANSITION

A forward looking and deployed navy must base its grand strategy on sufficient weapons systems. Otherwise it is just a kind of 'paper tiger'. So, to introduce as much high-technology hardware as possible will remain a top priority well into the new century. However, real breakthroughs can only be expected when China's general technological level is qualitatively upgraded. Progress here depends not only on China's economic growth providing more financial inputs, but also on availability of foreign technology and China's ability to absorb it. On the latter point, the prospects are not very bright. Since the Tiananmen event in 1989, Western exports of military technology to China have been brought under closer scrutiny. And, the Chinese are quite slow in mastering the technologies already purchased, be they Western or Russian.[24] Given the current obsolescent equipment of the PLA-N, probably for many years the Chinese Navy's blue water dream will remain a dream.

With hardware, all Chinese major surface combatants suffer from low levels of sophistication. With their 1950s era technologies, they are of little value in extended open ocean operations.[25] For instance, the Luda Class DDG and Jianghu class FF were designed to engage the enemy at close range with their guns. They lack surface to air missile (SAM) systems and thus are vulnerable to Mig-29s and F-16s which are being added to the high-technology inventories of other claimants to the Spratly Islands. In addition, the poor anti-submarine warfare (ASW) and electronic warfare (EW) capabilities and less than effective fire and navigation control systems of China's major surface combatants prevent the PLA-N from assuming the status of a blue water navy.[26]

The Navy Air Force represents the weakest link in the Navy's long-term plan to become a blue water power. A large number of J-6s (Farmer), the bulk of the NAF, are being de-commissioned since they cannot protect ships which venture beyond offshore areas.[27] At present, only SH-5 (Maritime Bomber 5) and H-6 (Badger) (a regiment each) are capable of oceanic aviation. The design of both was based on the Soviet prototypes of the 1950s. Since the 1980s, China has implemented a program of retrofitting its aircraft with Western technology, as a transitional measure before its new generation of aircraft become deployable.[28] However, the big gap between modern Western technology and obsolescent Soviet designs seems irreconcilable. So far, not a single retrofitting plan has yielded results that meet the PLA's expectation of narrowing the gap with third generation aircraft of the West.

The serious problem with slow generational upgrading of naval hardware is that while the bulk of the weaponry reached the end of its service life, replacements have been hard to come by. The new Zhenjiang Class destroyers and Jiangwei Class frigates have now entered series production, but they are not regarded as substitutes for Luda and Jiangdong classes. At best they are transitional designs to fill the immediate capability gap. Both are embodiments of Western technologies, from propulsion to interior design.

But their major weapons systems are China-made and outdated. The electronic systems cannot sustain a useful level of 'soft kill'. Air defence and missile defence systems are particularly weak and no match for modern sea-skimming anti-ship missiles (ASM) equipped with counter-countermeasures.[29] On the other hand, these ships cannot be the desired replacement for existing systems exactly because they are the embodiment of foreign technologies.

The PLA is most reluctant to submit the control of fleet modernisation to foreigners. There is also a problem of spares supply. Therefore, it is one thing to purchase foreign technology and hardware as the PLA's attempt at a 'quick fix'. It is quite another to do so as a long-term development strategy. As a result, the PLA-N's modernisation encounters an insurmountable obstacle in its transition:

it cannot rely on foreign transfers, nor can it produce its own quickly.

There has been only minimal quantitative expansion in the PLA-N since 1989. Even though another Zhenjiang Class destroyer and two new Han Class nuclear powered attack submarines (SSN) may enter service soon, the levelling off of the naval build-up will continue for some time.[30] Some relief may be attained, temporarily, through purchase of Russian ships. Again, this cannot offer the PLA-N a solid base for modernisation. It may well be that the PLA hopes that China's vigorous economic growth may quicken technological development and eventually boost its naval power. Yet this will not happen in the near future.

However, the fluid international relations situation in the post-Cold War Asia-Pacific region may not leave too much time for the PLA to wait comfortably: the Taiwan crisis looms larger and the Spratly dispute escalates. This presents a security dilemma for the Chinese leadership: whether to go ahead with a major build-up based on the current technology available to the PLA, or to continue to bet on a breathing period, during which it may concentrate on economic and technological development before it is able to quicken military modernisation.

In the years leading up to the Soviet collapse, the Chinese leadership resolved this dilemma by agreeing that there was no immediate security threat to China. So, it formulated a guiding principle for its weapons programs; a middle road course, between a strategy of steady generational upgrading and a strategy of generational leap. This has been spelled out by the Central Military Committee (CMC) as 'concentrated research on key items, selected production for 'fist' units, coordinated retrofitting of some current equipment and co-existence of both old and new weapons'.[31] Without an imminent threat, the Japanese way of incremental military build-up seems to fit the Chinese design: it will not hurt the economy and in due course the military will become powerful with augmented inputs.

The PLA-N claims that each year it injects some high-technology weapons into service, but on the whole it relies on its existing equipment. It would have afforded the time through which quantitative change leads to qualitative change, had it needed only to plan for small scale actions, similar to the clash it had with Vietnam in 1988. But the principle of selective introduction of high-technology hardware will not work in the across-strait confrontation with Taiwan.

For one thing, any action there can quickly escalate into major proportions. For another, Taiwan will soon surpass China in its accumulated inventory of high-technology weapons. Under the circumstances, China will have to make enough inferior weapons to compensate for the technological gap. This dilemma constitutes the worsening of a dangerous transitional vacuum for the PLA. Even if China is now able to devote more resources to building more major combatants, these will become obsolete the day they leave the shipyards.

Yet the urgency for more warships has been highlighted by the quickened slide towards independence in Taiwan and, to a lesser extent, by the recent complications in the Spratlys. It seems that history may repeat itself in the last years of the 20th century. In the late 1960s when China was forced to the brink of war with the USSR, it had to produce large quantities of tanks and anti-tank weapons for immediate use. Yet they never fitted into modern warfare and constituted a huge waste of human and material resources.

THE NAVY AND CHINA'S NATIONAL INTEREST

Naval power is closely associated with protection of national interest. Different countries give different substance to the concept of national interest. China's slow naval build-up somehow reflected its slow recognition of the relative importance of sea and continental territory. So national interest reflects, fundamentally, a value judgment. China has now viewed its maritime national interest to be a key component of its overall national interest; maritime territory, economic potential, control of SLOCs and the linkage between maritime security and world politics. Such a change has been brought about through a change in its traditional value system.

In recent years, the Chinese government and the military have sponsored a campaign to promote a 'sense of ocean' among the people. The country is now portrayed as both a continental power and a sea power. Against the Chinese traditional view of its 'yellow culture' which emphasises the glory of China's heartland history, Chinese scholars are now keen on introducing the concept of 'blue culture' (ocean culture) to the population.

According to their explanation, yellow culture is a synonym for closeness and conservatism, as it is inward looking and autarky and agriculture based. By contrast, blue culture indicates outward expansion, industry and trade orientation, and most importantly, a spirit of enterprise. The backwardness of China today is blamed partly on a Ming emperor's termination, in the 14th century, of the adventurous ocean voyages of Zheng He. The message is clear: should China have developed a sense of ocean 600 years ago, it would have long been a world power. And if China still sticks to its yellow culture, it will never acquire its rightful place in the world.

The education campaign has been instrumental in the revival of a sea power mentality (*haiyang yishi*) in China, which is also driven by China's increased involvement in international trade. Now this sea power mentality has been channelled to feed national patriotism in the country. In 1992, a TV series documented the defeat of the Chinese Navy in resisting Japanese invasion in 1895

and aroused a powerful reaction from the population, who wrote to the Chinese leadership demanding faster development of the PLA-N.

In a way, the Navy now functions as the linkage between the populous sea power mentality and rising nationalism. This has generated great pressure on the leadership to allocate more resources for naval development. On the part of the PLA-N, a sea power mentality helps change its traditional view of its role in national defence. Mahan's sea power theory is no longer seen as equivalent to 'gunboat' imperialism, but as a guide to understanding sea warfare in the modern world. Vice Admiral Cheng Mingshang, Vice Commander-in-Chief of the Navy, set this out in clear terms in 1991 :

> The Navy is the tool of the state's foreign policy. Compared with the Army and Air Force which cannot go beyond the national boundaries, an international navy can project its presence far away from home. It can even appear at sea close to the coasts of the target countries. While this may demonstrate the power of the big countries, it does not provide any formal excuse for the target countries to protest. This has made the navy the most active strategic force in peace time, a pillar for the country's foreign policy and the embodiment of the country's will and power.[32]

Among other things, this new recognition of naval power in the pursuit of national interest has laid the groundwork for the Navy to demand more leadership attention, national resources and popular support. Now, the Navy is represented in the top party and military leadership, as its former chief, Admiral Liu Huaqing is the *de facto* Commander-in-Chief of China's armed forces. Furthermore, until recently one of its vice commanders, Admiral Li Jing, was the First Deputy Chief of General Staff. The Navy's share of the PLA's overall budget has grown, in proportion, to about 30%. Similarly, its manpower strength has risen from 8% to 11% of the PLA's total, in contrast to the reduction of the Army from 81% to 75%.[33] In return, the Navy assumes heavy responsibilities in safeguarding China's maritime interests. This can be analysed more concretely in the following terms.

To protect China's maritime territorial sovereignty. China lays claim to a coastline of 18,000km and a vast expanse of ocean. When the UN Convention on the Law of the Sea (LOSC) is formally adopted, China can expand the waters over which it claims sovereign rights to 320km or 200nm, and legitimise its enlarged claims of about 3 million out of a total of 4.7 million square kilometres in the East and South China Seas and the Yellow Sea. Such an increase in sovereign rights will require a corresponding expansion of naval power for effective control over the area, in order to make the claim meaningful, as two-thirds of the claimed waters are subject to dispute. This is reflected by Admiral Liu's remarks that 'To

secure China's sovereignty at sea in terms of its maritime rights and interests is the primary goal of the Chinese Navy's future development'.[34]

To protect the coastal cities in depth. The economic growth of China's 13 coastal provinces has been in double-digit figures for the last 15 years. They now contribute 70 per cent of China's GDP and serve as the country's engine for economic development. The distribution of industrial bases along the coast has provoked calls for better protection in times of war. This requires an extended depth in defence, to protect the coastal cities from direct naval assault from the sea.

To protect China's oceanic natural resources. Chinese geologists have reported that the country's offshore mineral resources may amount to 8 billion tons. By the year 2000, China will produce over 500 million tons of crude oil from the sea, a figure approaching 40 per cent of its gross yield. The oil deposits in the South China Sea may promise a 'second North Sea'. As China's land-based oil deposits are fast diminishing, seabed oil extraction has gained importance. The deep-water basin in the South China Sea also has a rich concentration of manganese nodules. In addition, China has a potential tidal electric power generation capacity of 110 million kilowatts, of which only 0.3 per cent is being exploited and used at present.[35] The prospect of ocean exploitation is a major attraction for China, which is overpopulated but relatively poor in land-based resources.

To protect the SLOCs. China relies heavily on sea-borne freight, which comprises 40 per cent of its overall volume of goods transported and 90 per cent of export and import shipment. Today, China has about 1,500 ships travelling the world's oceans and receives an average of 100 foreign ships in its ports every day. By the year 2000, the volume of goods shipped in and out by Chinese vessels will reach 500 million tons per year,[36] placing an increasingly heavy onus on the Navy to protect sea lanes. Japan's extension of the protection of its SLOCs to 1,000nm and the United States of America's (USA) placing of 16 strategic sea lanes under Japan's control, has stimulated the PLA-N planners to think likewise. As mentioned earlier, the first island chain in the West Pacific has been identified as crucial for China's SLOC surveillance and over time this will be extended to the second island chain.

To meet the challenge from the sea. The closest linkage between the naval build-up and China's national interest is preparation for actions caused by conflicting territorial claims in the South China Sea. The Navy believes that over

two-thirds of its territorial waters have been encroached upon in the last three decades, due firstly to insufficient attention to oceanic importance and secondly to the lack of blue water capabilities. One naval commander wrote: 'According to the general practice of international law, as embodied in the case of Permas Island in 1928, the longer the dispute over the sovereignty of islands remains unsolved, the greater is the danger that we will never recover these islands'.[37] Indeed, short of full recovery, the exercise of sovereignty over the Spratly Islands through naval activities has remained high on the agenda of the Chinese leadership.

However, the most urgent task for the Navy in protecting China's national interest is dealing with the unification concerns over Hong Kong and Taiwan. Both issues involve enormous political consequences and play a crucial part in China's economic development. The Navy has made it a priority to create an effective capability to deter any crisis over either of these two territories. In the case of the latter, a blockade or invasion does not look so remote, as the trend for independence in Taiwan is apparently unstoppable, with Lee Denghui's decisive push. Indeed, how to conquer the Taiwan Strait, which is three times wider than the British Channel, and how to overpower Taiwan's enlarged arsenals of high-technology weaponry, represents a serious challenge for the Navy's strategic plans and hardware development.

The PLA-N and the Spratlys. In the Navy's ambitious modernisation program and forward defence strategy, the Spratlys dispute has occupied a unique position; providing substance to the PLA's second-tier strategy designed to cope with threats to China's maritime interests. To naval planners, China must raise its preparedness for the territorial conflicts which may disrupt its economic development. Rear Admiral Lin Zhiye commented:

> Towards the end of this century and early in the next, the major political and economic conflicts between our country and other countries will focus on the sea. The threats to our development and security also come from the sea. To be more exact, they lie in the areas within the first island chain in the South China Sea.[38]

Indeed, the preparation for maritime conflict around the Spratlys has been used by the Navy to demand more funds and high-technology weaponry.[39] The great distance (1,500km) between the Spratlys and the Chinese mainland justifies the acquisition of larger surface combatants, long-range aircraft and aerial refuelling technology, sufficient logistics supply capability, and forward naval bases in the South China Sea. The ability to overcome such distance constitutes the core of the Navy's blue water strategy; the need to improve mobility, rapid response and survivability. These constitute the criteria for the Navy's weapons

program well into the new century. So far, no other case can substitute for the Spratlys as a better stimulus for the Navy to conduct forward operations. Inevitably, the campaigners for a blue water navy regard the Navy's ability to reach the Spratlys to be a key parameter in safeguarding China's national interest.[40]

Forward deployment. The 1980s saw the PLA-N's power projection extended to the South China Sea, where the naval contingency plans highlight the capture and defence of the islands which China claims to be part of its territory.41 Militarily, this will impose formidable demands, as any action along this line has to proceed far from the mainland. According to some analysts, technical inadequacies forced the PLA-N to confine its 1988 operations to a few small reefs in the Spratlys, because it was incapable of sustaining a protracted war with Vietnam.[42]

PLA-N forward deployment can be observed from two angles. The first is the establishment of a permanent headquarters in the area: the Spratly Maritime Surveillance Command. What is unique is its extraordinarily high rank, which is divisional, for a fairly small force level of a few hundred officers and men. Indeed, the Command comprises four commodores. Apparently, this high level authority shows that the Command oversees the Spratly affairs, not only militarily, but from the political and diplomatic viewpoints. In addition, the Command is formally incorporated into the Navy's South Sea Fleet, meaning that China sees its commitment to and missions in the South China Sea as long lasting.

Secondly, the Navy has launched several military projects in the South China Sea. A Paracel Command was created at the regimental level in Yongxing (Woody) Island. In the largest island in the Paracels there are deployments of marine (tank) units, anti-aircraft batteries and high speed missile and patrol boats. There is also a command, control, communications and intelligence (C3I) centre capable of processing satellite-transferred information, and a runway for fixed-wing aircraft has been constructed.[43] This has reduced the burden of air coverage for a Spratly operation from the PLA-N's nearest Yulin Base by several hundred kilometres; thus raising the Navy's rapid response capability for a Spratly incident.

Nevertheless the Navy's forward deployment in the Spratlys will be characterised by visible weaknesses which prevent the Navy from taking drastic action. The number of soldiers which can be stationed in the nine islets is far smaller than that available to other claimants on their claimed islands. The long distance (1,300-1,600km) poses a formidable barrier to the PLA-N's contingency plans. For instance, its main surface combatants are vulnerable to land-based air assault by other nearby claimants. In contrast, China's land-based medium-range bombers cannot sustain an overseas operation because of their small numbers and limited endurance in the region (only a few minutes). The same can be said for China's submarines, whose technological deficiencies restrict their activities in the Spratlys, where the shallow waters and complex seabed situations raise the question of their survivability during a sea battle. But, most importantly, it is the political constraints on the Chinese which have prevented the PLA-N from asserting itself in the Spratly negotiations.

The swift ASEAN reaction to the Mischief Reef incident earlier in 1995 convinced China that it cannnot act alone in the Spratlys. Now it seems that it no longer has any options other than a peaceful settlement of the dispute. Therefore, when the Chinese leadership is pressured by two opposing forces (the nationalistic outcry for territorial recovery and deepening dependence on world trade) its Spratly policy naturally exhibits a degree of ambiguity; a continued naval forward deployment *vis-a-vis* conciliatory foreign policy efforts.

The former can be seen from the Mischief Reef event and the latter from major concessions made by China in ASEAN Regional Forum (ARF) meetings this year. China declared that it would be ready to conduct the Spratly talks, according to international ocean law, a departure from the previous position, based on the concept of historical waters. It seems that the PLA has given a measure of support to the current civilian policy makers who may think in terms of 'land for peace'.[44] However, given the PLA-N's traditional view that China's maritime security has to be guaranteed by sufficient military strength rather than diplomatic appeasement, a question can be raised about whether there would be another Mischief Reef occurrence. And there is a limit to what the civilian leaders can do in the light of rising military influence in the lead-up to the post-Deng era.[45]

So, what makes the Spratlys a potential flashpoint is exactly this ambiguity, which also marks the position of other claimants. It is a flashpoint, as the question of sovereignty is non-negotiable because of domestic nationalistic pressure. It is only a potential flashpoint, however, as all the claimants are under real constraints, forcing them to the negotiating table. Consequently, this dictates a measure of flexibility in their interactions.[46] Under the circumstances, a Chinese pattern of response to the Spratly stalemate has taken shape and can be generalised as maintaining the status quo.

To be more specific, this means that China is reinforcing its existing naval presence, but at the same time working for a negotiated settlement. At the moment this is the kind of compromise reached between the civilian leaders and the Navy. The PLA strategists have agreed to an eventual redrawing of maritime borders in the South China Sea, despite the Chinese emphasis on shelving sovereignty for the time being. Without clearly defined borders, it is difficult to pursue economic cooperation in the area.[47]

The Navy and its Spratly presence. Under such a compromise, the PLA-N's strategy towards the South China Sea is centred on two considerations in the short to medium terms; maintaining a properly scaled presence and status quo. The Navy's capture of a few Spratly islets in 1988 was a response to the similar actions previously taken by Vietnam. As a latecomer in deploying troops in the area, China calculated that it had to obtain a presence in some 'no men's islets' at whatever price. Although China followed other claimants in getting foreign companies involved in oil extraction in the disputed waters, the act spelled out a degree of preemption. The Mischief Reef incident may have indicated a higher degree of assertiveness. Nevertheless, it has not transcended the limit of the two considerations mentioned earlier.

A naval presence in military terms, which in turn creates a form of *fait accompli* in legal terms, is vital for China for two reasons. It would enhance China's position in the West Pacific, both economically and strategically. But the most urgent need for China to have a foothold there stemmed from its concern that, without a presence in the Spratlys, it would be either excluded from or marginalised among the resolution parties. So, in a sense, the Mischief Reef move was similar to the 'play Go' tactics of laying a piece in the area to be contested later. Mischief Reef serves as a new presence in the Southeast Spratlys. This may or may not be removed in the future, depending on China's perception of its usefulness, but it has certainly placed China in a better bargaining position in the negotiations.

Again, in this case, the question of a presence is important in two respects. First, it differs from an expansionist strategy aimed at engulfing the entire Spratlys. Since 1988 there has not been any armed clash initiated by China. It did take two 'no men's islets' but this was not evidence enough to indicate that the PLA-N is now bent on occupying the area. This leads to the second aspect of the PLA-N's Spratly strategy; an appropriate scale of presence. Without this, China still has difficulty making a case in the negotiation process. However, 'what is appropriate?' constitutes a difficult question. Realistically speaking, excluding the possibilities of a large scale military takeover, the PLA-N can do very little here: all islands that remain dry at high tide have been taken. Time is also limited for China to take those other small and unoccupied reefs.

The Navy has to consider seriously factors such as which country claims them, how far they are from the SLOCs, the defence cost, their legal and strategic values, and likely international reaction. In this respect, a desirable scale of presence may not have been so desirable in reality, if it proves to have been unachievable. One analyst described the most recent Spratly actions as rash.[48] Indeed, the larger the presence obtained by the use of force, the greater the negative implications which may result, and the benefits in such an action may diminish. Therefore, China's option has to be a fine-tuned one. The scale of any

naval action must be closely linked to the political and diplomatic efforts to defuse a subsequent outcry, which is simply not easy. In a way, a symbol of foreign presence is more important than military occupation.

However, it goes without saying that China seems to bear a heavy responsibility in avoiding escalation of the dispute because, whilst it is the country with the smallest presence in the Spratlys, it has the greatest capability to enlarge that presence. China's reluctance to join in regional efforts to increase security transparency may have contributed to the questioning of Chinese intentions: yet to equate a forward defence strategy with an expansionist military policy may be over-simplifying this vital issue.

The difference between the two concepts may be explained by China's efforts to maintain the status quo in the Spratlys. Naval force is likely to be employed only as a last resort to defend against a direct assault on the islets already in Chinese control, or an attack on China's oil facilities, but not as a means to expand Chinese presence beyond certain limits. Certainly, other scenarios can trigger Chinese naval actions-detaining Chinese vessels in disputed waters, construction of oil rigs in overlapping areas and arrests of Chinese naval men or fishermen for example. Unless there is some domestic political excuse, China may carefully confine conflict to the minimum. In fact, situations along the lines mentioned above have happened before without representing an insurmountable barrier to resolution.

So, with the foothold achieved, it is in China's interest to implement its post-Cold War periphery strategy, centred on improving relations with its neighbours.[49] What worries the PLA more now is how to obtain a measure of deterrence against the pressure of the big powers. In particular, it cannot afford to be dragged into a two-front battle with both ASEAN, over the Spratly dispute, and with Taiwan, over the issue of independence.

In the PLA's overall policy hierarchy, the challenge of the latter is more urgent than the former. Although the Spratlys is at present the most important naval priority, it is nevertheless of short-term importance. Some analysts believe that the longer-term priority is to establish China as a major regional sea power. To this end, it needs to deter competition from other aspiring naval powers, most significantly from India and Japan, as well as to meet more effectively the challenges of US sea power in the region.[50] If this is the case, in the process of resolving a dispute, a distinction can be made for a navy focusing on recovery of claimed territories and one concerned mainly with a general force modernisation.[51]

CONCLUSION

The Chinese Navy is set to become more powerful in the new century, although, as its transitional problems have shown, the process will be long and painful. What will a forward looking, forward deployed but poorly equipped navy do to the region? The answer very much depends on how China sees the realisation of its national interest. China's immediate and long-term economic interests have been served well by integrating its economy with the rest of the region and the world. This has generated political constraints on China and has induced it to demonstrate a degree of reconciliation to a negotiated settlement of disputes. At the same time, China's national interest in protecting its territorial integrity allows the Navy to develop power projection capabilities and to forward deploy forces 1,000km away from the mainland. Apparently, the Navy conditionally accepts the government's Spratly policy of restricting its existing presence and maintaining the status quo. Seen through its neighbours' eyes this ambiguity constitutes a source of tension which fuels the naval build-up in the region.

The current strategy of the PLA-N is to modernise its weapons so as to narrow the gap with the West, and China's economic boom seems to make it more affordable than before. A senior PLA officer stated clearly that it was against logic throughout the world that a large country should become an economic power of the 21st century, but leave its military capability behind in the 20th century.[52] However, this goal can be realised only when the PLA overcomes its present transitional difficulties. Although its concern with the big powers may require the PLA to downgrade some of its specific regional focuses, such as the Spratlys, the spillover of this arms catch-up with the big powers may contribute to security uncertainties caused by a regional arms build-up in the new century. In the long-run, the PLA-N's identification of the big powers as targets for hardware modernisation may better enable it to flex its muscles in a regional conflict, should the need arise. Under the circumstances, it is more urgent than ever before to establish multilateral regimes to discipline the unchecked naval arms race. There must be continuing collective effort to prevent history from repeating itself, as we have seen in the late 19th and early 20th centuries, when major powers tried to become hegemonic through building powerful navies.

Notes

1. One vivid example was the navy's inshore strategy formulated in the 1950s. This strategy was a combination of the Soviet 'small battle' theory and Mao Zedong's people's war principle. It remained unchanged for the next three decades.
2. The shift has been brewing for several years with the Gulf War as the key catalyst. The chief advocates for the strategic change are Admiral Liu Huaqing and General Zhang Zhen. Now this high technology oriented strategy has been the banner of the new PLA leadership since the 14th Party Congress in 1992. It has affected all aspects of the PLA's development, as Zhang Zhen called for 'five breakthroughs' in the PLA's military thinking, tactics, training, research and development and organization. Liang Minglun, 'The Basic Traits of Combined Operations under the conditions of Hi-tech Wars', *Journal of the National Defence University*, No.1, 1993. p. 42. For a more detailed analysis of the new strategy, see You Ji, 'In Quest for a Hi-Tech Military Power: The PLA's Modernization in the 1990s', in Stuart Harris and Gary Klintworth (eds), *China as a Great Power in the Asia-Pacific: Myths, Realities and Challenges*, New York: St. Martin's Press, 1995.
3. Wan Pufeng, 'Meeting the Challenge of Information War', *China Military Science*, No.1, 1995, p. 15.
4. This section is an analysis of an official report by a research group of the PLA-N, headed by Commodore Shen Zhongchang. The report is entitled 'Discussion of Sea Warfare of 21st Century', *China Military Science*, No.1, 1995, pp. 28-33.
5. Wan Pufeng, *op. cit.*, p. 15.
6. Lieutenant General Qian Diqian, 'Production must serve military training', *The Military Economics*, No.2, 1989, p. 21.
7. However, by the end of this century several Asian countries will possess a good amount of high technology weapons. This will force the PLA to work out countermeasures. Particularly urgent is the case of Taiwan.
8. For instance, US lawmaker Doug bereuter believed that the US should contain China rather than engage it. *Far Eastern Economic Review*, 28 September 1995, p. 30.
9. *Liaowang*, No.27, 1994, p. 10.
10. For example, in 1993 the Central Military Commission instructed PLA research institutions to shift their efforts from abstract research on concepts, to specific research on foreign armed forces and to reduce history-related projects to enhance those which are future oriented.
11. He Wenlong, 'On the Counter Measures to Win a High-tech Regional War', *Journal of the National Defence University*, No.1, 1993, p. 63.
12. Zhou Yingcai, 'Think of the Phenomenon of Limited War that Cannot Be Limited', *Journal of the National Defence University*, No.1, 1995, pp. 24-28.
13. A proper translation of the Chinese word *Jinhai* is the term 'green water'. According to Bradley Hahn, the term is used to express a naval capability somewhere between 'brown water' (coastal defence) and 'blue water' (full open-ocean fleet). See 'Hai Fang' *US Naval Institute Proceedings*, Vol. 112/2/997, March 1986, p. 116. This paper argues that a 'green water' power is not the Navy's goal. All its efforts point to the direction of becoming a 'blue water' power.

14. Li Dexin, et. al. 'A Balanced Development is the Key task for the Navy in the New Era', in Academy of Military Science (ed), *The Standing Army in the New Era*. The Academy of Military Sciences Press, 1990, p. 221.
15. The second island chain lies a few hundred nautical miles east of the first island chain and more than 1000 nautical miles away from continental China. See Lu Rucun, et. al., (eds), *The Contemporary Chinese Navy*, Beijing: Zhongguo shehui kexue chupanshe, 1987, p. 477.
16. Wang Dongpo, 'The Strategic Rivalry in the West Pacific and Our Security Development', in *New Asia*, No. 1, 1990, p. 115.
17. *Jianchuan zhishi*, No. 8, 1991, p. 2.
18. Li Dexin et. al., *op. cit.*, p. 227. See also You Ji, 'The Spratlys: A Test Case for China's Defence and Foreign Policy', *Contemporary Southeast Asia*, Vol. 16, No. 4, March 1995, pp. 375-403.
19. In the clashes with Vietnam in 1974, the navy hurriedly had to dispatch ships from the east and North Fleets to the South, trading off the strength in these key areas. After the South Sea Fleet had been reinforced in the 1980s, it was able to plan the incident in the Spratlys with great ease in 1988.
20. *Foreign Information Broadcast Service* (FBIS) CHI-90-106, 1 June 1990, p. 30.
21. Shi Fei, *The Development Trend of the Chinese Military*, Chengdu: Sichuan kexue chubanshe, 1993, pp. 1-27.
22. *ibid.*, pp. 12-13.
23. Ye Zhi, 'Come, the Aircraft Carriers', *Military Economics*, No.1, 1989, p. 5.
24. Bates Gill, 'Determinants and Directions for Chinese Weapons Imports', *The Pacific Review*, Vol.8, No. 2, 1995, pp. 359-382.
25. George Galdorrisi, 'China's PLA-N', *US Naval Institute Proceedings*, Vol. 115/3/1033, March 1989, p. 103.
26. G. Jacobs, 'Chinese Navy Destroyer Dalian', *Navy International*, No. 9-10, 1992, p. 103.
27. The number of J-6s is expected to be halved over a short period of time. The money saved should fund research and development for the new generation of attack aircraft. See Zhang Cangzhi, 'On transforming Our Air Force from Defensive Oriented to a Combination of Defensive and Offensive Oriented', in Academy of Military Sciences (ed), *The Standing Army in the New Era*, p. 245.
28. Wang Yamin, 'Several Questions Concerning the Modernization of Weapons', PLA University of national Defence, (ed.), *Thinking of the PLA's Modernization*, pp. 187-195.
29. Bates Gill, *op. cit.*, p. 378.
30. Greg Austin, 'The Meaning of Military Modernization for Asia-Pacific Security', Hung-mao Tien and Chu Yun-han, eds. *Asian-Pacific Collective Security in the Post-Cold War Era*, Boulder, Co: Lynne Rienner, forthcoming 1996.
31. General Zheng Wenhan, 'Speech at the Conference on Army Building', The Academy of Military Science (ed.), *Xinshiqi changbeijun jianshe yanjiu*, p. 10.
32. *Jianchuan zhishi*, No. 11, 1991, p. 2.
33. Zhang Yihong, 'China Heads toward Blue Waters', *International Defense Review*, No. 11, 1993, p. 879.
34. Liu Huaqing, 'To Bring up New Talents for the Building of a Powerful Navy', *Hongqi*, No.2, 1986, pp. 17-21.
35. Admiral Liu Huaqing's article in *Liaowang* (*Outlook*), No. 8, 1984, pp. 8-9.

36. *People's Daily*, (Overseas edition), 18 June 1990.
37. Teng Yu, 'Enhance the Sense of Sea Territories and Boost the Naval Build-up', *Theory Forum*, Hebei People's Publishing House, 1988, p. 175.
38. Xiao Jun, 'Priority and Balance', *Jianchuan zhishi*, No. 11, 1989, pp. 2-4.
39. Wang Ziqiang, 'The Key Questions Concerning the Naval Development in the New Era', *Thinking of the PLA's Modernization*, 1988, pp. 375-389.
40. Chen Shoukang, 'Our Country Must Have an Offshore Defence Navy', *Thinking of the PLA's Modernization*, pp. 390-392.
41. Xiao Jun, '*Priority and Balance*', p. 4.
42. Marko Milivojevic, 'The Spratly and Paracel Islands Conflict', *Survival*, January-February 1989.
43. Andrew Mack and Desmond Ball, 'The Military Build-up in Asia-Pacific', *The Pacific Review*, Vol. 5, No. 3, 1992, p. 200.
44. This is reflected in a public statement by Chinese defence minister Chi Haotian during his visit to Malaysia in May 1993, that no military force would be used to settle the Spratly dispute.
45. The Chinese diplomats have been thinking of making concessions over the Spratly dispute for some time. Xu Jian, 'The Convergent Security Strategy in Asia and the Pacific', *Research Report* No. 146, June 1994. International Studies Centre of the State Council. But, some analysts claimed that the PLA voiced strong opposition.
46. As far as China is concerned, this flexibility is reflected in its proposal to shelve the issue of sovereignty for the time being.
47. Wang Zhenxi, 'Continued Shock of the post-Cold War and Uncertainties in the Adjustment Process', *China Military Science*, No. 1, Spring 1994, p. 89.
48. Michael Richardson, 'Spratly Increasing Causes for Concern', *Asia-Pacific Defence Reporter*, No. 14, October 1992, p. 35.
49. The essence of this periphery strategy is spelled out by a senior Chinese diplomat as 'to put things right in the backyard in order to consolidate China's foot'. *Journal of Foreign Affairs College*, No.4, 1994. p. 16. For a detailed analysis of this strategy, see You Ji, 'China's Foreign Policy toward Post-Cold War Asia and the pacific', in Hung-mao Tien and Chu Yun-han (eds.) *Asian-Pacific Collective Security in the Post-Cold War Era*, Boulder, Co: Lynne Rienner, forthcoming 1996.
50. Tai Ming Cheung, *Growth of Chinese Naval Power*, Singapore: Institute of Southeast Asian Studies, 1991, p. 9.
51. This may be speculative but plausible. Since the 1990s, the PLA has reduced naval exercises in the South China Sea.
52. 'The Chinese Military Threat: A Myth or a Reality', *Bauhinia Magazine*, No. 8, 1993, p. 74.

3 The Japanese Maritime Self-Defence Force in the Next Century

SUMIHIKO KAWAMURA

AFTER the end of the Second World War, Japan's complete disarmament was achieved in accordance with the directive of the Supreme Commander of the Allied Powers. The legacy of the US occupation left Japan with many constraints on its autonomy in defence issues. Pacifism has been prominent in Japan since the end of the war: Japanese had good reason to mistrust militarism and to avoid discussion of security.

DEFENCE POLICY IN JAPAN

The American-drafted 1947 Japanese Constitution requires, in Article 9, that Japan forever renounces both war as a sovereign right of the nation and the threat or use of force as a means of settling international disputes. Article 9 was interpreted as preventing Japan from entering into collective security arrangements and as restricting Japan to possession of defensive weapons only. Until 1990 it was interpreted as preventing the dispatch of Japanese military personnel overseas for any purpose. But another US fiat, issued in 1950, ordered Japan to rearm as the Korean War broke out. Japan was ordered to raise a 75,000-man National Police Reserve.

As to maritime forces, mine-warfare assets were reactivated within the Maritime Safety Agency (Coast Guard), formed in 1946, and its minesweepers were dispatched to assist the Allied Forces in Korea. Two of the Japanese vessels were sunk during the operations. Prime Minister Shigeru Yoshida agreed to provide for Japan's security in the 1951 US-Japan Security Treaty. This arrangement gave the United States rights to military bases in Japan and provided a US security guarantee in the event of Japan's being attacked. Foundation of the Japan Defense Agency (JDA) and Self-Defense Forces (JMSDF) followed in 1954, with large-scale US military assistance.

In 1976, Japan's first comprehensive defence plan, the National Defense Program Outline (NDPO) was implemented in response to the increasing Soviet

threat and the perceived decline of the US commitment to its allies following the Vietnam War. The NDPO was designed to improve Japan's ability to provide for its own defence. The most detailed defence plan issued by the Japanese Government to that time, it outlined target force levels and aimed at least to hold the line until US forces could arrive to provide assistance, in the case of any security crisis.

But until 1981 Japan's defence efforts were meagre; Japan totally depended on the United States for its defence against the powerful Soviet Union. In 1981, Prime Minister Zenko Suzuki formally announced Japan's willingness to share defence roles with the United States and for Japan's part, pledged to defend its own territory, the sea and skies surrounding Japan and its sea-lanes to a distance of 1,000 miles. This milestone policy proclamation has since propelled the JMSDF's expansion to achieve the capability to carry out these chosen military roles, complementary to those of the United States, particularly in the areas of anti-submarine warfare and air defence.

Japan's current defence arsenal includes 60 modern destroyers, 100 P-3C maritime patrol aircraft and 200 F-15 fighters. These front line weapons systems are maintained in a state of high readiness and could be useful in promoting stability through deterrence as well as in preventing the spread of conflict in the Asia-Pacific region, in concert with US forward deployed forces. The US Forces Japan (USFJ) and the JMSDF conduct annual combined exercises, and the way they cooperate and plan for contingencies is governed by a set of guidelines established in 1978.

With regard to Japan's Maritime SDF force levels, the last comprehensive review of the defence program in Japan was conducted in 1976. This review produced the NDPO, which defined JMSDF missions within the US-Japan Security Treaty; The NDPO contained an annex defining the force levels required to deal with limited attacks and to allow cooperation with the US to cope with a larger attack. The JMSDF has been developed and expanded in accordance with five-year defence programs based on the 1976 NDPO annex, with annual spending pegged at around one per cent of gross national product (GNP). For example, in the NDPO annex, the JMSDF's force levels have been defined as approximately 60 anti-submarine surface combatants, 16 submarines and approximately 220 operational aircraft.

THE PRESENT STATUS OF DEFENCE POLICY IN JAPAN

The JDA is now reviewing the NDPO as a part of its efforts to seek an appropriate defence posture in the post-Cold War era. The revision had been intended for completion by the end of Japan's fiscal year 1994, but political and practical

considerations led to a delay. A new NDPO will be introduced in December 1995, after approval by the Cabinet.

Japanese media have reported that the new NDPO is expected to be centred on a 'base force strategy', or basic defence capability, able to react to a variety of threats and crises. Threat scenarios could include a limited invasion or interruption of the SLOCs, violations of airspace, occupation of outlying territory, armed unrest among asylum seekers and terrorist acts. The current NDPO was designed to respond only to a limited-scale invasion of Japan. The new NDPO draft document states that Japan's national security environment has shifted from the threat of armed invasion to a set of multi-faceted crises requiring greater flexibility of response. It adds that the risk of global conflict has reduced, and emphasis is instead placed on controlling regional conflicts and the proliferation of weapons of mass destruction or dual-use technologies. The draft deals with the threat of armed invasion by emphasising the importance of US-Japan security arrangements, as well as supporting other forms of international cooperation, including activities under the auspices of the United Nations.

Under the circumstances, the Ground, Maritime and Air Staff Offices of the JDA are each now developing a plan to reduce part of their major front line equipment and personnel. The JMSDF has completed a plan to reduce the number of P-3C aircraft and destroyers. It is the first time that the Self Defence Forces have had to announce planned reductions in their personnel and major front-line equipment. They plan to supplement the reduced equipment with increased support capability. These plans will be used as the basis of the JDA's overall formal plan. The JMSDF's overall strength is, meanwhile, to be reduced from 280,000 to under 250,000, with a reorganisation that will take a decade to implement.

In respect of equipment, according to the JMSDF's plan, the ten escort divisions under regional districts engaged in defence of coastal waters around Japan, are to be streamlined and integrated into eight divisions. Coincidentally, the present scale of the ocean going Self-Defence Fleet, four escort flotillas, will be maintained as Japan's main mobile naval force. Modernisation will be promoted through replacement of old ships with new ones. As to P-3C maritime patrol aircraft, the overall strength of approximately 100 aircraft will remain, but only 70 to 80 P-3C will be maintained in a fully ready (alert) status. Transport capabilities will be improved, through the construction of transport and replenishment ships intended for international peacekeeping and disaster relief operations. However, the new NDPO does not deal with the proposed ballistic missile defense (BMD) project, which is to be evaluated separately by the JDA's BMD Office. A draft JDA budget request earmarks Y450 million (US $4.5 million) for ballistic missile defense research in 1996.

FLEET STRUCTURE OF THE JMSDF

At present, the JMSDF has two different types of operating forces-the Self-Defence Fleet and regional district forces. The Self-Defence Fleet is a mobile force in a 'blue water' mode, while the five regional districts are responsible for defence of coastal waters and logistic support of the mobile force units. The Fleet Escort Force, the Fleet Air Force and the Fleet Submarine Force come under the Commander-in-Chief, Self-Defence Fleet. These three forces of the Self-Defence Fleet have four escort flotillas, seven air wings and two submarine flotillas, respectively. Each escort flotilla consists of two DDGs, one helicopter destroyer (DDH) with three helicopters and five destroyers (DD). Each DD carries one helicopter. As for the regional surface forces, under the five regional districts, there are ten escort divisions composed of approximately thirty surface combatants in all.

The JMSDF future structure and roles await reviews of the 1976 NDPO and conclusion of the BMD research which is being conducted. However, several significant procurements can be expected by the end of the century; the JMSDF has commissioned two Kongo (7,250 tons) Class AEGIS destroyers and another two ships are being built. These four AEGIS destroyers will add a new dimension to the JMSDF's four escort flotillas, acting as command and control as well as air defence ships. These vessels will also assume a new and significant role for the air defence of Japan's mainland.

To complement the Kongo class AEGIS destroyers, six Murasame (4,400 tons) Class general-purpose destroyers with the MK 41 and the MK 48 Vertical Launch System (VLS) have been authorised in the current defence program (1991-95) and several more will also be built in the next defence program (1996 -2000). The JMSDF maintains a steady submarine construction program, to maintain a fleet of 16 boats operated in two submarine flotillas. The Harushio (2,750 tons) Class conventional submarine is the latest design, which is equipped with Harpoon anti-ship missiles.

The JMSDF has been authorised to install the Australian Defence Industries (ADI) made dyad mine sweeping gear on its newly designed coastal minesweepers (MSC), beginning in 1995. As for auxiliaries, with the lessons learned during the 1992 UN peacekeeping operation in Cambodia, the JMSDF has put more emphasis on the improvement of logistics. In 1993, an 8,900 ton LST (Landing Ship Tank) with two LCAC (air cushion landing craft) was authorised, and 13,000 ton AOEs are being considered.

With maritime patrol aircraft (MPA), even though some aircraft are highly likely to be transferred into reserve status, the JMSDF will maintain 100 P-3C Orion, in addition to several EP-3 electronic intelligence (ELINT) variants, which are being regularly upgraded.

At the completion of the current defense shipbuilding program (1991-95) in financial year 1999, it is estimated that the JMSDF fleet will consist of 56 major surface combatants. The structure will be as follows:

32 ships in four escort flotillas for the Fleet Escort Force of the Self-Defence Fleet

- Four 'Kongo' Class AEGIS DDGs
- Four 'Hatakaze' Class (4,600-3,890 tons) non-AEGIS DDGs
- Four 'Haruna' Class (4,950-5,200 tons) DDHs
- Six 'Murasame' Class DDs
- Eight 'Asagiri' class (3,500 tons) DDs
- Six 'Yamayuki' class (3,050 tons) DDs
- One non-AEGIS DDG as the Fleet Escort Force flagship of the Self Defence Fleet
- One 'Tachikaze' class (3,890 tons) non-AEGIS DDG
- 23 ships of the Regional District Commands
- Six 'Hatsuyuki' class (2,900 tons) DDs
- Six 'Abukuma' class (2,000 tons) DEs
- Three 'Ishikari' class (1,290 tons) DEs
- Eight 'Chikugo' class (1,470 tons) DEs

THE JMSDF IN THE NEXT CENTURY

At present, the 1976 NDPO is being reviewed and in line with some expected reductions in force levels, will probably include the reorganisation of the Self-Defence Force. However, in respect of Japan's fleet structure in the near term, the Self-Defence Fleet is likely to remain the same in numbers of ships through decreasing the numbers of ships under the five regional district commands. Before reforming Japan's fleet structure, it is more important to discuss fleet operating concepts in a changed environment and to solve long-pending problems hindering the JMSDF's smooth functioning, such as the self-imposed limitation against collective defence.

As to the most urgent potential threat, that posed by North Korea, Japan could anticipate attack by North Korea on the US Forces in Japanese bases if war broke out. The same would be true if U.N. sanctions were imposed against North Korea to resolve the confrontation over North Korea's nuclear weapons development. Since Japan would likely be urged to take part in any U.N. naval blockade, this would raise the issue of constitutionality again.

Flexibility in interpreting Article 9 has been stretched to credible limits due to discord among the current ruling coalition parties. Therefore, except for cases involving unarmed JMSDF personnel for U.N. peacekeeping operations or for disaster relief operations, strong political leadership is necessary to dispatch the

JMSDF troops overseas in a timely manner. Such aggressive action would very probably stir emotion at home, yet Japan experienced bitter international criticism in 1990 by refusing, for reasons of constitutional restrictions, to dispatch Self-Defence Forces to the Gulf for Operation Desert Storm. As it was, minesweepers were sent after hostilities were over and Japan contributed US$13 billion to share in the conflict's cost.

Japan's failure to send its troops to the Gulf in a timely manner definitely frustrated the Self-Defence Force community and strengthened the bonds among influential politicians and intellectuals who seek change. Very probably, Japan will reach a political consensus that it does indeed have the right to take part in collective self-defence operations. Such a determination will allow Japan legally, by political decision within the present Constitution, or through a revision of Article 9, to work with the United States in an emergency.

To solve these potential problems during peacetime, more frequent and closer consultations between the US and Japan are inevitable. Since Japan's commitment to defend its sea lanes within 1,000 miles falls far short of potential trouble areas in the South China Sea, a three-pronged effort for a US-Japan mission sharing scheme, in the post-Cold War period, will need to be adopted to facilitate a close cooperation between the two navies.

Firstly, Japan should provide a supply ship (AOE) of the JMSDF to support the USS INDEPENDENCE aircraft carrier battle group, home-ported in Yokosuka, and minesweepers to fill a void in the US Navy's capability, for use throughout the US Seventh Fleet operating area in the Western Pacific and Indian Oceans. This proposed combination of the US Seventh Fleet and Japanese assets would show a Japanese willingness to support regional stability in a meaningful way, that would aid American flexibility in keeping an effective deterrent and peace restoring capability in the Western Pacific and Indian Oceans. It would also be acceptable to foreign public opinion, which might be wary of an autonomous deployment of Japan's military forces outside of its territory.

A supply ship (AOE) is by definition a naval support vessel rather than a combatant. Similarly, judging from the Japanese public's very positive reaction toward the dispatch of four minesweepers to the Persian Gulf in 1991, little domestic objection is anticipated to Japan's willingness to fill a critical US Navy deficiency by offering JMSDF minesweepers throughout the Western Pacific. Minesweepers are perhaps the most inherently defensive combatant ship type which exists. Japan's more than 30 minesweepers are modern and carry well trained crews. Only a few minesweepers are assigned to the US Seventh Fleet on a regular basis.

Secondly, the United States and Japan should start bilateral discussions on the desirability of Japanese-American joint operations, involving US Forces and the JMSDF for the purpose of promoting deterrence in the Asia-Pacific region and, if necessary, peace restoration in time of crisis. While overseas deployments of Japanese destroyers and P-3C maritime patrol aircraft would be more controversial than those of a supply ship and minesweepers, as were deployed to the Persian Gulf in 1991, destroyers and P-3Cs are also defensive rather than power projection units.

The third and most challenging, yet promising, area of the US-Japan defence cooperation could come in the field of ballistic missile defense. In particular, a combined US-Japanese BMD architecture would probably make the most strategic, political, timely and financial sense for both countries. The outcome of the ongoing Japanese theatre missile defence (TMD) study should determine the architecture and platform requirements.

In the post-Cold War era a similar offensive-defensive role sharing regime between the US and Japan 5 judged as still appropriate for deterrence and crisis restoration. Japan should allow its defensive assets to be used outside its close environs if it is going to cooperate with the United States (and/or with the United Nations) in a flexible alliance or peacekeeping relationship. Deterrence provided by the United States will remain indispensable and critically important to the stability of the region. Even more than during the Cold War, the US military presence is recognised as vital and welcome by almost all states concerned. No other country can assume that US role.

Japan need not become a military superpower, but it almost certainly needs to continue to maintain the capability of being a deterrent or crisis limiting force, under the auspices of the US-Japan Security Treaty or the United Nations. The JMSDF should continue to carry out its defensive roles, complementary to those of the US Navy, particularly in anti-submarine warfare, air defence, anti-mine warfare, and logistics support in addition to peacekeeping operations.

CONCLUSION

In conclusion, the US and Japan now have 40 years of experience in working together militarily, and for the last 15 years Japan's capabilities have become militarily significant. To utilise these capabilities more flexibly now, as is appropriate in the post-Cold War environment, is justified and would very much help to demonstrate, transparently, that Japan is willing to contribute responsibly and meaningfully in a defence sharing arrangement that does not change its fundamental, defensive nature. The proposed flexible operations of the US

Forces and Japan's Self-Defense Forces and a combined US-Japan BMD architecture in the Western Pacific area, under the US-Japan umbrella, seem compatible with Japanese legal and political constraints, and need not rouse Japanese, American and other Asian countries, fears of Japanese militarism.

4 The US Pacific Fleet into the Twenty-First Century: Challenges and Opportunities

JOHN F. SIGLER

IN 1945, at the end of the Second World War, the United States Navy (USN) Pacific Fleet consisted of 4,790 ships. By the time that the United States had become directly involved in the Vietnam War the fleet numbered 532 ships, and towards the end of the Cold War the total had been reduced to 283. This trend has continued, so that today the USN comprises 196 ships and expects to enter the year 2000 with about 175. Yet the decline in numerical strength is by no means the whole story: relative capability must also be considered.

For example, a Second World War destroyer displaced 1,800-2,200 tons, whereas contemporary destroyers like the newest class, DDG 51, displace over 9,300 tons. Similarly, the largest USN aircraft carriers in the Second World War displaced 33,000 tons and submarines 2,450 tons. Contemporary USN carriers displace 96,000 tons and attack submarines 6,900 tons. The increase in size has been matched by gains in lethality, and unfortunately by dramatic increases in costs.

A significant point in reviewing these developments is that with the exception of battleships, the types of ships in service today are essentially the same as they were over 50 years ago. There is no guarantee, however, that such stability in platform types will continue. The question, then, is what kind of USN Pacific Fleet will face the challenges of the 21st century?

To help in formulating answers to this question, there are several parameters which determine what the USN looks like; the most significant are budget, threat, available technology and the synergistic capabilities of its sister services and allies. An additional parameter, which significantly affects the Pacific Fleet, is forward basing in Japan. Because of the long transit times associated with operations in the Pacific, every ship based in Japan represents three to five ships homeported in Hawaii or San Diego. As we attempt to develop our strategic plan for the future, each of these parameters naturally becomes less certain the further forward we project. To put this in perspective, one needs only to imagine how successfully we might have predicted in 1965.

So even a thirty year prediction, a 'nano-second' in the long and complex history of Asia, becomes not only extraordinarily difficult, but will almost certainly be wrong. Yet, we build our ships to serve us for 30 to 40 years. The aircraft carrier USS MIDWAY, for example, served ably for 46 years until her retirement in 1991, just four years ago. Likewise, a particular type of aircraft can stay in the inventory for over 35 years. The P-3 maritime patrol aircraft has been in service since 1961 and the A-6 attack aircraft has been operational since 1963. Even the relatively 'new' F-14 fighters have served for over 23 years already.

PREPARING FOR THE FUTURE

How then does the USN prepare for the future? Currently, USN Pacific Headquarters is preparing with the assistance of the Center for Naval Analyses, the answer to that question. Essentially, the approach being adopted is one which is being used increasingly by business, a hedging approach.[1] In this approach, the future is being broken down into three categories; enduring principles, identifiable trends and the great uncertainties. Then, for each parameter which could affect the fleet a range of possibilities will be developed; from the benign to the draconian – or, as in the case of technology, the exotic. Finally, the Navy will seek to position itself, within budgetary constraints, to be able to respond properly and efficiently to the emergent realities. To make the process of prediction manageable the focus will be on the year 2010, a point which represents the approximate half-life of a ship commissioned in 1995.

An initial assessment of the three categories associated with the hedging approach is now available. The first one, enduring principles, or those factors which are likely to remain relevant includes:

a. The geography of the Pacific and Indian Oceans and the associated 'tyranny of distance' will continue to ensure that ship deployments from the United States remain a time consuming business-even if ship speeds increase to over 50 knots.

b. Strategically critical focal points, such as the various straits providing access through the Indonesian archipelago, will remain important.

c. The world economy will increasingly transcend national boundaries and will become ever more interdependent.

d. The impact of this global economy will ensure that the United States of America retains world-wide economic, political and military interests.

e. The Pacific and Indian Oceans will retain preeminent places in world economic terms. Today, half of US trade is with or travels through the Pacific,

while only 20 per cent is conducted with Europe.

f. Friction, crises and conflict-including natural disasters and other environmental crises-will continue to threaten regional stability and US interests.

g. The vast majority of trade in the Pacific and Indian Oceans will continue to be carried in ships; implying a continuing need for freedom of the seas and security of sea lines of communication.

h. Naval forces will remain mobile and flexible instruments of their governments.

i. Naval forces will remain in demand as an instrument of US national policy. As stated in the US Navy White Paper *Forward ... From the Sea* forward deployed naval forces will 'provide the critical operational linkages between peacetime operations and the initial requirements of developing crises and a major regional contingency'.[2]

j. US naval forces will continue to operate in one or more of three regimes; as exclusively maritime forces, as part of joint US forces, or in combined operations with foreign navies, each one in predetermined alliances or as ad hoc coalitions.

The second category of identifiable trends includes:

a. US trade with the Pacific region is set to continue growing. Currently, two and a half million US jobs are directly attributable to trade with this region; a figure which is forecast to grow to four million by the turn of the century and to six million by the year 2010.

b. Asian economies can be expected to continue growing at rates not matched by the rest of the world. This growth will most probably be accompanied by increasing regional competition for constrained natural resources.

c. Over recent decades, technology has not only advanced significantly, but the rate of advance has accelerated dramatically. In computing, for example, generational change took 36 months only a few years ago. Now, generations of computers are being supplanted after only 18 months. Likewise, military technology will continue to advance rapidly and at least some of those advances will become readily available to more nations, with increasing sales competition, corresponding falling prices and improved regional economies.

d. Concurrently, US defence budgets will vary from reflecting almost no growth to slight growth as force reduction programs are completed. Yet, the relatively new and as yet not fully defined issue of information warfare will play

an increasing role in military operations in general and in naval operations in particular.

The third and final category of identifiable trends covers the uncertainties which may be faced in the early part of the next century. These could include the unification of the Korean peninsula and the nature of unification. Assuming that unification does occur, there would also be substantial interest in the external policies which would be espoused by a unified Korea.

Clearly too, China's plans and foreign policy directions will be of great interest. Specifically, the US will watch carefully the intent which accompanies a greatly improved naval capability. Additionally, the way in which China manages Hong Kong after its handover in July 1997, its approach to Taiwan and the way in which it tries to resolve the territorial and resource issues in the South China Sea, will be important pointers for regional security in the future.

Other significant uncertainties will be whether and how much Russia recovers economically, and the future direction of its foreign policies. A related issue will be the perceptions in Asia of the US commitment to the Asia-Pacific region, together with perceptions and the reality of ongoing regional influence enjoyed by the US This latter issue will, of course be influenced by the extent to which US forces will retain access to forward bases.

If for these or other reasons US regional presence and influence are diminished, there will be a degree of uncertainty over the resultant regional balance and stability. Other factors which could influence this issue include the prospect of regional proliferation of weapons of mass destruction, the future of the India-Pakistan dispute and the effects of transnational illegal movements of people throughout the region.

Even though the future is particularly difficult to forecast at present, several of the existing uncertainties can be expected to crystallize within the next five years. For example, Hong Kong will revert to China's control and the continuing relationship between China and Taiwan will be heavily influenced by the results of this reversion. Furthermore, China's internal situation should be clearer as there will have been a change of leadership and the political, military and social effects of rapid economic growth should be more firmly established.

Consequently, China's approach to regional security should also be clearer, especially with respect to the relationship with the United States and Japan. China's position relative to possible accommodations in the South China Sea and its attitude towards Vietnam, now a member of the Association of Southeast Asian Nations (ASEAN) should also be better developed. By contrast, however, the year 2000 will see other uncertainties persisting and yet more appearing unforeseen.

MANAGING FOR THE FUTURE

To this point then, certain implications of the United States' hedging approach are evident. Firstly, the US must retain its ability to remain forward deployed and ready to respond to likely tasking, ranging from humanitarian assistance to major military contingencies in Korea or Southwest Asia. The forward deployments should continue to support Commander-in-Chief Pacific's (USCINCPAC) strategy of 'cooperative engagement' through bilateral and multilateral exercises, other kinds of training support, personnel exchanges, and port visits.

Secondly, the USN must continue to guard and improve where possible, quality of life programs for its people, because they are indeed the linchpin of USN readiness. Associated with this is an ongoing need to maintain readiness in terms of training, maintenance, supply support and an adequate shore infrastructure.

Thirdly, the USN needs to retain adequate force levels, to provide the sense of stability so important to further regional economic development. Because of lessons already learned, the USN now limits its ships and crews to deployments of six months duration, allows its people to spend half of their time in their home ports and gives at least a year's break between deployments. Even with these self-imposed limits the USN can sustain approximately 45 per cent of the fleet under way or deployed at any time. Surge beyond that level is possible for short periods and of course, there is additional flexibility in fleet operations when deployment rates are below 45 per cent of the fleet.

Even as the fleet has reduced in numbers by about 6 per cent per year since 1989, the USN has managed consistently to keep about 26 ships in the Western Pacific. Inevitably, however, deployment levels come closer to the 45 per cent mark each year as the navy tries to do more with less. The present deployment level is at 42 per cent, resulting in a great loss of flexibility. Consequently, force levels cannot be allowed to decline much more, if *existing* commitments are to be met.

Fifthly, modernisation should be conducted in an evolutionary way, so that the fleet is kept relatively young and on a pace with technological advances in command and control and in offensive and defensive weapons. The key to this modernisation will be to make the most effective technological improvements to existing platforms. Force multipliers need to be selected; that is, affordable systems which increase force lethality by more than the cost would imply. Examples include survivability improvements, which allow ships and aircraft to apply firepower in littoral areas previously denied to them by weapons like mines, or surface to air missiles. Other examples include precision guided munitions, remotely piloted aircraft and underwater craft, distributed command and control

systems, improved intelligence collection and dissemination and information warfare.

Simultaneously, there will be a need to design the entirely new platforms which will carry the USN through to the middle of the 21st century. This will involve having the answers to a range of questions such as:

a. Should the USN stay with the trend of the past fifty years and build new ships which are larger and more lethal; or should it build larger numbers of smaller, more manoeuvrable ships which maintain lethality through emergent weapons technologies? If the answer is to build a mix of capabilities, what should the mix be?

b. How can the USN ensure that its new weapons systems are compatible with and mutually enhancing of the capabilities of other US Services and allied armed forces?

c. Should USN doctrine and operational patterns change to reflect newer, as yet unforeseen, financial and security realities? Will the nature of naval warfare simply evolve further, or will it experience a revolution?

The challenge for the US Pacific Fleet is to design a fleet for the Pacific Century. As part of this challenge the USN will carry forward the enduring principles of maritime strategy, as well as the evident trends of economic and security development in the Pacific. There is also opportunity for the USN in its ability, in the short term, to use existing resources to the best effect and to position itself to deal with future uncertainty. In the long term, the USN will need to be flexible and innovative; that being the only way that it will maintain its competitive edge and provide the security which American taxpayers and their allies and friends expect and deserve.

Notes

1. Henry C. Bartlett, 'Approaches to Force Planning' *Naval War College Review*, May-June 1985, pp. 44-45.
2. John H. Dalton, Admiral J.M. Boorda, USN and General Carl E. Mundy, Jnr USMC, *Forward ... From the Sea*, Washington, DC: Department of the Navy, 1994, p. 3.

5 The External Maritime Dimension of ASEAN Security

J.N. MAK AND B.A. HAMZAH

WITHOUT any doubt the Southeast Asian region, in particular the ASEAN countries, has become the fastest growing arms market in the world. What is true of the ASEAN market is also generally true of the Asia-Pacific countries. For the period 1985-1992, Indonesia is the only ASEAN member whose defence expenditure has shown a drop (of 2.2%). In the rest of Asia-Pacific, only Australia (-1.1%), New Zealand (-6.0%) and Vietnam (-0.4%) showed a decline in defence spending over the past five years.[1]

Nevertheless, in terms of the military burden, which is defined as the proportion of military expenditure as a percentage of gross domestic product (GDP) almost all countries in the Asia-Pacific region reported a decline.[2] The only exceptions are Brunei, North Korea, Fiji and Papua New Guinea, the last two of which have to deal with rising internal insurgency problems or unresolved social problems. North Korea's rising expenditure derives only from what it considers to be quite an unstable regional strategic scenario. Brunei's rising defence expenditure is attributed to new capital investment and the need to increase incentives as soldiering is not a lucrative vocation in the Muslim Sultanate. Brunei does not have to contend with an internal problem or a hostile external environment.

Financial and economic considerations have a strong influence on the way governments spend on defence. Post-Cold War defence spending, at least among the ASEAN countries, is driven more by resources than by specific threat perceptions. Thus one can expect almost all countries in the Asia-Pacific region, and in ASEAN especially, to spend more on defence in the future as the regional economy expands. The availability of surplus funds will compensate for the absence of specific external threat or threats.

Besides growing economies, the motivations for expanding military expenditure can be found in new opportunities for weapons purchases. Malaysia's purchase of MiG-29s, for example, represented not only a totally new source of armaments, from Russia, but was paid for in part through barter trade: palm oil

for aircraft. The success of an indigenous military industry program in Taiwan, Singapore and South Korea provides a new dimension to military spending in the Asia-Pacific region. This success will spur more countries in the region to emulate this approach and will inevitably raise the proportion of GDP spent on defence. Some of the figures, however, will not be captured in most statistics as they are not seen as direct spending on defence. A good example is that of China. A study has shown that the actual military expenditure for China was RM45 billion in 1993, much higher than the officially reported PLA figure (about RM7 billion).[3] There will be more examples of hidden costs in the future as defence spending and other economic activities become blurred, as has happened in China's case.The major direct beneficiaries of expanded military budgets in ASEAN Southeast Asia are the air forces and navies. Besides generating more ocean space to defend, as a result of the coming into force of the 1982 Law of the Sea Convention, the new Exclusive Economic Zones have put greater pressure on resource enforcement and resource protection programs at sea.

This chapter also argues that while the ASEAN countries have been slowly but steadily developing a maritime capability since the mid-1980s for a variety of reasons, the present driving force is a particularly worrisome one – that is, the emphasis on contingency planning in an increasingly uncertain world order. It has become somewhat fashionable to refer to the ongoing ASEAN arms build-up as either defence modernisation or an arms race, or elements of both.[4] But, the situation is more complex. The defence build-up in the Asia-Pacific region is not one single arms race which can be easily modelled or analysed. It is in reality several overlapping circles of arms or naval rivalries fuelled by factors or dynamics unique to each circle. One analyst in fact refers to the ASEAN arms build-up as a series of bilateral arms races which must be separately analysed.[5]

Thus when one looks at ASEAN defence planning in the post-Cold War world, one must realise that it is sometimes over-simplistic to adopt a regional Asia-Pacific approach. It is quite irrelevant to argue for instance, that because the ASEAN members are obviously not in competition with China or Japan, an arms race is therefore not taking place. Neither is it particularly relevant to aggregate the ASEAN build-up and treat it as a regional case study. A disaggregated approach is likely to be far more valuable.

The ASEAN arms build-up should therefore be seen as a development to be analysed separately from the rest of Asia-Pacific, because the ASEAN members have obviously eschewed playing in the maritime 'big league' for the lack of resources. They are therefore all players in the 'junior league' of the maritime build-up, which in turn makes them all potential competitors. Consequently, this makes the ASEAN arms build-up potentially destabilising.

This chapter also argues that the very nature, structure and history of ASEAN tends to de-link ASEAN security interests instead of reinforcing them in the post-hegemonic world. The paper thus comes to the conclusion that there is little real prospect for meaningful or significant defence cooperation in the short-term for ASEAN.

TOWARDS A MARITIME RE-ORIENTATION

In the last two decades or so, the ASEAN countries have switched their focus from counter-insurgency to conventional land warfare and, for the present, on maritime forces, including maritime air.[6] The ASEAN maritime re-orientation has been driven by a number of external factors. These include the absence of land-based threats with the disappearance of the so-called overland 'Vietnamese threat' of the 70s. This has been reinforced by ASEAN's general success in defeating or containing armed communist and separatist insurgencies in Thailand, Malaysia, and most recently, the Philippines. The shift to a maritime emphasis is only natural and a matter of geography, since ASEAN consists of essentially maritime nations. Even Thailand, often described as belonging to 'continental Southeast Asia', has two seaboards, one on the east, the other on the west. Laos is the only land-locked state in Southeast Asia.

Furthermore, the three UN Conferences of the Law of the Sea in the 1970s which culminated in the 1982 UN Convention on the Law of the Sea contributed to the creation of new maritime regimes and frontiers, the most significant being the 200-nautical mile Exclusive Economic Zone (EEZ). This, *inter alia* resulted in the need for the protection of marine resources and in expanded maritime areas. While the 1982 Convention extended maritime boundaries which led to ASEAN states sharing common maritime boundaries with Vietnam and China, the Convention does not provide for any specific procedure for resolution where EEZ delineation is in dispute.[7] As such, the 1982 Convention contributed directly to the appearance of new maritime disputes in Southeast Asia; the most potentially dangerous being the Spratlys dispute in the South China Sea.

The 1982 Convention, and with it the Spratlys dispute, brought home to ASEAN states the belated recognition that nearly all of them are maritime nations highly dependent on the sea. As such, ASEAN became increasingly aware of the need for maritime security and resource protection.[8] These are the reasons usually put forward to explain the increasingly maritime orientation of ASEAN defence.

THE STRATEGIC SCENARIO SINCE THE MID-1980S: THREAT PERCEPTIONS AND ASEAN DEFENCE PLANNING

While the reasons for a maritime re-orientation are quite clear, perhaps the single most important factor which has and will affect ASEAN defence planning has been the end of the Cold War. From a comfortable bipolar balance of power, in which the 'old' world order had been frozen into place for 40 years, Southeast Asia where the 'stabilising influence of external navies has historically been greatest',[9] could be heading for 'interesting times'. This was underscored ,by the virtual disappearance of the Soviet Pacific Fleet following the demise of the Soviet Union, whose presence as a regional balancing force in Southeast Asia 'some viewed to be helpful, especially in the context of China in the South China Sea'[10] coupled with the withdrawal of US military forces from the Philippines.

In the context of the Asia-Pacific region, the Cold War essentially involved maritime forces, with the US 7th Fleet playing the pivotal role in the US military strategy, and the US naval drawdown therefore could have serious ramifications. Much ink has already been spilt on the breakup of the Soviet Union and the creation of what has been variously described as the New World Order, or the post-hegemonic order, and the strategic window of opportunity it has created for regional powers such as India, Japan and China.

On balance, the two most important factors affecting the defence acquisitions by the ASEAN states over the past five years or so are external threat perceptions resulting from the end of the Cold War, and from the perspective of the ASEAN members, an essentially maritime Cold War. The second factor relates to the internal non-threat dynamics of the ASEAN countries themselves.

While the influence of regional and extra-regional actors, especially China, in the current defence build-up cannot be denied, in the final analysis there are no imminent or pressing near-term external threats facing ASEAN. In short, while there is the recognition that these regional naval powers could be a threat in the long-term, whether directly or indirectly, there is also the realisation that they are not militarily threatening in the near term.

For ASEAN, perhaps the greatest significance of the end of the old, bipolar strategic 'order' has been the creation of more diffuse, lower-level threats. One characteristic of the old world order was the absence of ambivalence. Things were black and white, there were 'good guys' and 'bad guys'. Therefore the most significant strategic fallout for Southeast Asia and ASEAN has been the rise of ambivalence and uncertainty, which has resulted in what Jonathan Pollack of RAND has described as a switch from a 'threat-driven' defence calculation to one that is 'uncertainty-based'.[11]

For Southeast Asians, the Asia-Pacific region is paradoxically becoming more

complex, more multipolar and potentially more volatile. Indeed, several analysts have argued that the current ASEAN maritime build-up is largely the result of fears that China, India or Japan might attempt to exploit this strategic window of opportunity, and the ASEAN naval build-up is an attempt to create a regional capability to counter the Chinese naval presence.[12]

But, it needs to be pointed out that it is wrong to attribute the current build-up only to the perceived need to counter extra-regional or regional powers. While this is without doubt an important factor, it is crucial to bear in mind that the ASEAN members are in no way attempting to compete with the Chinese Navy or the Japanese Navy. Any such attempt would be extremely expensive, destabilising and possibly counter-productive.

NEW REGIONAL 'THREATS': CHINA, INDIA AND JAPAN

China

Significantly, while China was regularly touted as Indonesia's and Malaysia's primary security threat in the Cold War years, attitudes have changed, at least officially, since the end of the Cold War. Indonesia resumed official ties with China in August 1991, followed by Singapore and Brunei. Since 1992, the ASEAN countries have become increasingly accommodating towards China. This is reflected in Malaysia's new attitude towards Beijing, and in Prime Minister Mahathir's argument that China is no longer a threat to the region. In what can be considered to be a strategic *volte face*, Mahathir was reported to have claimed that 'US naval fleets in East Asia were 'a waste of money' as there was nothing to fear from either Japan or China'.[13] This is in stark contrast with the official perception as recently as 1991 that China was the greatest long-term threat to regional stability.[14] The new pragmatic approach results from the awareness that, compared with a US in retreat, China is physically at least, part and parcel of Southeast Asia. Realpolitik dictates that it is not only prudent, but economically profitable, constructively to engage China. Thus China was invited to join the ASEAN Regional Forum (ARF) in Bangkok in 1994.

But, while China is no longer regarded as a direct and immediate military threat, the PRC still figures prominently in ASEAN's strategic calculations. This is caused by uncertainty, China's geographic proximity, Beijing's all-encompassing claim to the South China Sea, and its potential military might. While China has constantly assured ASEAN of its peaceful intentions, the fact that it is modernising its military machine, and acquiring long-range power projection capability in the form of modern air power and sea power, makes the Southeast Asian states jittery.[15] The one certainty about China is its long-term uncertainty.

The question of its aging leadership remains unresolved – whence the next generation of leaders, and what would be their foreign policies? What will be China's future strategic direction? Indeed, various analysts have argued that central authority in China will increasingly become weaker, and that there is even the possibility of a China breaking up after the death of Deng Xiaoping.[16] They have also proposed that a new generation of Chinese leaders might embark on foreign, external adventures in for instance, the South China Sea, to give Chinese nationalism an external focus. Overall, 'it is impossible to forecast China's future at this point'.[17]

Nevertheless, while many analysts talk of the dangers or threats posed by China, especially in the Spratlys, and of the Chinese naval build-up, no one has drawn a plausible specific scenario in which China will use naval force against any of the ASEAN countries.

Japan

The same applies to Japan and India. There is a great degree of uncertainty over Japan's regional military role. Some fear a militarily reassertive Japan on the one hand, and on the other, there are proponents of a more militarily active Japan to be a countervailing power against long-term Chinese ambitions in the region. Even Japan itself is 'genuinely uncertain about what foreign policy role it should play and even more deeply about where its interests lie'.[18]

Given the perceived inevitable US military drawdown in the long term, Japan will probably find itself increasingly compelled to look after its strategic interests in the Asia-Pacific region. In the final analysis, Tokyo realises that it cannot rely on the US military shield forever. Japan has no resources other than her people, and her wealth and prosperity increasingly depend on offshore manufacturing in Asia, as well as on free access to raw materials, energy and markets. Japan also needs unimpeded passage through all major sea lanes in Asia-Pacific. Taking account of these factors, there are four circumstances in which Japan might well rearm and acquire the capability to project power in the Asia-Pacific region:[19]

a. instability or conflict in the Korean peninsula,

b. conflict in the South China Sea which would disrupt Japan's maritime lifeline,

c. the closure of the vital Southeast Asian straits (Malacca, Lombok and Wetar among others) which would choke off Japan's oil supplies from the Middle East, and

d. instability in the Middle East which would disrupt vital supplies of gas and oil.

Much has been said about Japan as a potential military power. What is not generally realised, however, is that Japan today is a constrained power. In the 1930s, Asia consisted of either corrupt, ineffective regimes or was divided up as colonies by Western imperialists. Consequently, Japan, as the only effective industrialised power in Asia at that point in history, was able to indulge in military adventurism with a marked degree of success. Japan's ultimate defeat in the Second World War came despite the fact that it was a member of an anti-Comintern axis which included Nazi Germany and Fascist Italy.

Today, the geo-strategic situation is to say the least, very much less in Tokyo's favour. The new post-Cold War era, the end of the East-West confrontation and the demise of the Soviet Union have disadvantaged Japan economically and politically. They have made Japan no longer America's 'unsinkable aircraft carrier' and Washington's strategic linchpin to contain Soviet expansionism in the Far East, and consequently have allowed resentment against the so-called Japanese economic imperialism to reach new peaks in the US.[20]

Secondly, Japan today is but one industrialised power, albeit the most advanced, in a region which in demographic and military terms is dominated by China. Moreover, a unfied Korea has the potential to become a significant military power. Despite the fact that it is a member of the world's new concert of six world powers, Japan is arguably the most vulnerable, with 'fewer basic strengths than the other five'.[21] Coral Bell includes the US, Western Europe, Russia, India, China and Japan as the six members of the new 'concert of powers'. Of the six, Japan has the smallest population, an extremely limited territory with no hinterland, and virtually no natural resources.

In other words, Japan would be very hard pressed to dominate Asia militarily today, given the current military and demographic balances, and the military potential of Korea, Taiwan and the PRC. As such, any sabre-rattling by Tokyo, much less the actual use of military force, would be counterproductive for Japan. Consequently, there should be little fear in Southeast Asia of a militarily irresponsible Japan in the medium and long term. From ASEAN Southeast Asia's point of view, Japan could be used as a countervailing power to China's military might. In this sense, perhaps, many would not be hostile towards a Japanese military presence in the region to counter an assertive China. Indeed, there are indications that some ASEAN leaders would rather engage Japan positively in its quest for regional security, than wait for Japan to seek it unilaterally, since Japan will inevitably seek to underwrite its own regional security in an evolving strategic environment.

The US-Japan trade friction, for instance, has given rise to fears that the Treaty of Mutual Co-operation and Security between Japan and the United States of America of 1960 might eventually break down. This would result in

Tokyo rearming, and triggering off an arms race in Northeast Asia which would destabilise the entire Asia-Pacific region. Indeed, a Sino-Japanese arms race-which most people assume would be conventional-could very well turn into a nuclear arms race since Japan, even more than India, is virtually capable of going nuclear at the 'turn of a screwdriver'.[22]

Despite memories of Japanese World War II atrocities, Southeast Asia in the long term should have no serious reservations about a Japanese military presence in the region.[23] The only real fear is that it would most likely spark off an arms race involving China, and to a lesser degree, the two Koreas. The very close Russian and Chinese military cooperation existing at the moment, especially through Moscow's sale of its latest technology and equipment to Beijing, could well force Japan to accelerate its rearmament program. Overall, in spite of public statements regarding the dangers of a re-militarised Japan, ASEAN's defence modernisation has little to do with its perception of the 'Japanese threat'.

India

India, while often mentioned as a potential regional major power, does not loom very large in ASEAN's strategic calculations today. Indonesia is fairly sanguine about New Delhi's maritime power and intentions, while relations between India and Malaysia are extremely cordial after a hiatus of some years.[24] These ties were cemented with the signing of a Memorandum of Understanding on defence cooperation in February 1993. Essentially, while ASEAN was worried about the expansion of the Indian Navy in the mid-1980s, that fear has receded with the realisation that New Delhi's strategic preoccupation lies west and north of the sub-continent, particularly after the break-up of the Soviet Union.[25]

Indeed, India is worried about the rise of a new Muslim heartland based on Iran, Pakistan, Turkey and the former Soviet states of Central Asia. By contrast, ASEAN remains stable and non-threatening. Moreover, India's foreign policy after the deaths of Indira and Rajiv Gandhi, is no longer so assertive, and there is the general realisation in Southeast Asia that India's 'Indira doctrine' ends where the approaches to the Malacca Straits begin.[26]

Thailand, of course, has cited the rise of Indian naval power as a reason for its own naval modernisation and expansion. But, the Indian 'threat' does not really figure prominently in Thai calculations, except to the extent that it provides another excuse for the Royal Thai Navy to obtain more funds. For ASEAN on the whole, the Indian naval 'threat' has been relegated to the backburner. On the other hand, most of Southeast Asia is still somewhat apprehensive about a resurgent China, which has not only the world's third-largest fleet, but a fleet which is surely and steadily on its way to acquiring a blue water capability.

THE SPRATLYS: THE NEW ASEAN 'GLUE'?

Another direct result of the breakup of the Soviet Union has been the resolution of the Cambodian problem. Plagued with economic problems on the verge of the breakup, Moscow decided that it could no longer afford to keep on supporting Vietnam financially and diplomatically.[27] The subsequent strategic retreat of Moscow forced Hanoi to rethink its position in Cambodia, and to agree to the Paris Agreements of 1991. The Cambodian settlement removed, virtually at one stroke, the sole security issue for ASEAN.

'A number of observers believed that with the end of the East-West War and the signing of the Paris Agreements on the conflict in Cambodia in 1991, the glue that had held ASEAN together would be lost and the organisation would soon begin to unravel. Events in 1992 suggested that a number of unresolved regional security issues, among them the fate of the Spratly Islands in the South China Sea, would continue to reinforce the importance of ASEAN'.[28]

But can the Spratlys become the new security glue to hold ASEAN security interests together? This is unlikely to happen because Malaysia, the Philippines and Brunei are among the six claimants involved in the dispute over the archipelago, and there has been no effort to solve the dispute on an ASEAN basis.[29] This has been so because divergent national interests are still paramount, and ASEAN still feels that it is unnecessary to close ranks where the Spratlys is concerned. The one exception has been the ASEAN Foreign Ministers' joint communique issued in Manila in July 1992. Significantly, the Spratlys issue topped the Agenda of the 1992 ASEAN Ministerial Meeting (AMM) in Manila, and it was the inspiration behind ASEAN's first formal declaration involving regional security, the ASEAN Declaration On The South China Sea, which emphasised the need to solve all sovereignty and jurisdictional issues in the South China Sea by 'peaceful means, without resort to force'.[30]

While some analysts have interpreted this declaration as a sign of increasing ASEAN security cooperation, in truth it was more of a reaction towards China's passing of a law on its territorial waters in February 1992, which reasserted China's 'undisputed sovereignty' over the Spratlys and Paracels, followed by its signing of an agreement with the US-based Crestone Energy Corporation for the exploration of oil and gas in a 25,000 square kilometre area around the Spratlys.31 In that sense, the AMM declaration was more reaction than evolution. As noted earlier, no ASEAN country can afford to confront China militarily or to engage Beijing in an arms race. Thus the AMM declaration should be seen as an attempt by the ASEAN members to handle China, responding specifically with non-military means to a situation which could potentially disadvantage all the ASEAN countries.

Another reason for the lack of a more cohesive ASEAN approach to the Spratlys dispute is that while the conflicting claims are potentially destabilising for regional security, the Spratlys dispute does not really threaten the national security or existence of any of the ASEAN claimants.

THE PRIMACY OF CONTINGENCY PLANNING

Ultimately, what is the single biggest military threat facing the ASEAN countries? In the short term, it is neither China, nor India nor Japan, nor even conflict over the Spratlys. As has been observed:

> (in) East and Southeast Asia, there remains much fertile ground for regional conflict. There are numerous issues of shimmering and potential conflict involving competing sovereignty claims, challenges to government legitimacy, and territorial disputes. **Most of these issues are unlikely to lead to inter-state conflict.**[32] (Emphasis added)

This situation is reflected, for example, in Indonesia's open acknowledgement that the Republic faces no 'immediate outside threat' and that 'Indonesia (is) content to stay (a) military dwarf'.[33] Nevertheless, the lack of readily identifiable enemies in the short and medium terms and uncertainty over the long-run shape of the regional order; for example the role of Japan and possible Sino-Japanese naval rivalry, have led to a mood of uncertainty in strategic planning which has placed the emphasis on contingency planning. ASEAN contingency planning, however, is not based on scenarios involving the major regional powers, such as China and Japan. It involves planning against lower-level threats, such as piracy, illegal immigration and threats which might emanate from near neighbours, or which might arise from intra-ASEAN tensions.

In short, the ASEAN countries have quite realistically eschewed playing in the maritime 'big league'. The modernisation programs can therefore be described as belonging to the 'junior league' in terms of scale and numbers. But this can be potentially destabilising for Southeast Asia because it makes all the ASEAN members potential competitors, precisely because they would all be playing in the same league. Since all are 'junior league' players, an intra-ASEAN arms race would become thinkable at least in economic terms. Moreover, 'junior league' contingency planning in the absence of serious military threats allows non-threat dynamics, like competition for prestige and the influence of the military, to surface and sometimes even dominate. Factors such as lingering intra-ASEAN suspicions and competition for status can therefore become more important.

The increasing importance of contingency planning against what might be termed 'deterrable threats' for countries like Singapore, is underscored by the

fact that the US is no longer the regional policeman. The utility of the US military presence in Southeast Asia after 1975, centred largely on the Philippines, was not only in the shield it provided against so-called Communist aggression during the Cold War, but also in the way it checked the regional animosities of Washington's allies. The US presence reassured Singapore, for example, that it would be able to depend on an external power against any possible attempt by Indonesia or Malaysia forcibly to annex the island republic.

With the disappearance of the Cold War bipolar balance of power and with the US seemingly less committed to the regional policeman role, countries like Singapore increasingly see the need to counter potential adversaries. Thus, contingency planning has once again taken on a new dimension, especially with regard to intra-ASEAN contingencies.[34] Because of current uncertainties, Singapore has adopted a dual track security policy. The first is its attempts to engage ASEAN partners more constructively through foreign policy initiatives. The second is to rely on defensive deterrence. Thus, Singapore's defence planning is increasingly based on countering the unpredictable. This is underlined by the fact that Indonesia's Suharto, who has been friendly to Singapore, is aging. Furthermore, an Indonesia under a new leadership may not be as constructive in its relationship with Singapore. Likewise, Singapore is also worried about the future direction and policies of Malaysia, especially if an Islamic government takes over.

This uncertainty, and the consequent importance of contingency planning, is one reason why nearly all ASEAN countries are building up their maritime defence and indeed, overall defence capability. When pressed hard to explain their arms build-up, the usual explanation offered by the ASEAN countries is that it is 'just in case'. For instance, Malaysia's former defence chief, General Abdul Rahman, chided critics of the country's current defence modernisation program for failing to understand 'the meaning of defence and security' and explained that strong armed forces were needed 'as no one knew who would become the country's enemies and threaten its sovereignty'.[35] In the words of the Malaysian Defence Minister, Najib Tun Razak, 'due to the uncertain and fluid nature of the strategic environment, the MAF (Malaysian Armed Forces) had to be prepared for all eventualities'.[36] Similarly, contingency planning was one reason put forward by Thailand for its naval expansion. According to former navy chief, Admiral Vichet Karunyavanji, although 'Thailand has friendly relations with all its neighbours, especially ASEAN countries, we cannot afford to be complacent. We need to maintain our military preparedness'.[37]

But planning for contingencies against neighbours and fellow members of the grouping is something which the ASEAN states cannot directly and openly articulate. Yet it remains an important consideration behind the current arms build-up. The danger of contingency planning is that:

> ... there is no obvious boundary between taking prudent steps to prepare for future challenges and taking actions that could be perceived as threatening others and thus stimulate hostile responses.[38]

In short, the current defence acquisitions by the ASEAN states are, in a sense, a form of arms race powered by the dictates of contingency planning, or uncertainty-based planning. Nevertheless, this is not a hostile arms race in the classic sense of the term[39] and incorporating Gray's four basic conditions:

a. There must be two or more parties, conscious of their antagonism.

b. They must structure their armed forces with attention to the probable effectiveness of the forces in combat with, or as a deterrent to, the other arms race participants.

c. They must compete in terms of quantity (men, weapons) and/or quality (men, weapons, organisation, doctrine and deployment).

d. There must be rapid increases in quantity and/or improvements in quality.

Even so, contingency planning and with it the acquisition of more modern and capable military power have serious future implications for three reasons:

a. ASEAN can afford to spend more on arms purchases as a result of strong economic growth. That is, defence expansion and modernisation is affordable for most countries.

b. There is increasing uncertainty over the shape of the regional order, coupled with the possible failure of the other facets of security policy which the ASEAN partners have relied on in the post-war era; namely alliance structures, external guarantors and non-alignment postures.[40] Harris makes the point that 'there is a tendency for defence expenditures to increase only modestly in the absence of a threat to security, and to respond to fluctuations in domestic economic well-being'.

c. There is a supplier-driven buyer's market. This is another direct result of the end of the Cold War which has had considerable impact on ASEAN's defence programs. There is a surplus of arms in the market and excess defence production capacity, especially on the part of Western arms manufacturers. Cutbacks in defence spending in Europe and America have made the Asia-Pacific market very lucrative. Additionally, further competition for the traditional Western arms suppliers is being provided by firms from Russia and South Africa. ASEAN countries are being tempted by 'deals of the century'

and arms packages which include everything from training to counter-trade by these suppliers.

So, whether we like it or not, a certain level of defence capability is being established in ASEAN. While its conventional combat potential is difficult to assess and should not be equated with mere numbers or the simple acquisition of weapons systems and platforms, there is no escaping the fact that in the long-term, arms procurement in the absence of any clear rationale or logic can be destabilising.[41] This chapter argues that while ASEAN has acquired significant numbers of relatively 'hi-tech' weapons systems since the mid-1970s, doctrine as well as operational efficiency still leave much to be desired.

Unfortunately, in contrast to economics, there are no baseline indicators to indicate when any defence modernisation or expansion program is tending to be destabilising. Arguments put forward to explain why ASEAN's current defence programs are not destabilising and therefore not likely to spark an arms race include:

a. the fact that the numbers of weapons in individual ASEAN country inventories were very few to begin with, and

b. the fact that present acquisitions need to be viewed as contributing to replacement or modernisation programs for navies with old and obsolete equipment.

These are valid explanations, but the danger is that numbers can increase slowly and imperceptibly. Simultaneously, improvements in capability, theoretically at least, can be exponential in terms of accuracy, range and effect. herein lies the danger. We can all go over the edge before realising it. The ongoing maritime buildup in ASEAN countries is being driven by a sense of insecurity and unease in what has sometimes been described as a 'post-hegemonic' world.

ASEAN AND DEFENCE COOPERATION

Some commentators argue that ASEAN was founded on the security need to reconcile differences among the five original members and that the grouping has 'very successfully contained, but has made very little attempt to **resolve,** intramural disputes'.[42] This is particularly pertinent in relation to the future of ASEAN defence cooperation. There are two relevant perspectives, both interpretations of a similar set of factors: lingering intra-ASEAN tensions and the increasingly uncertain world.

In the first case the view is that ASEAN should cooperate in respect of defence and security to:

a. enhance confidence because of lingering historical intra-ASEAN tensions, and

b. promote a united ASEAN front in the face of an increasingly uncertain world order.

On the surface, there appear to be several reasons why ASEAN should have little difficulty in upgrading defence ties. The first is that ASEAN has been a success as a sub-regional multilateral organisation, thus making more necessary and more likely an enhancement of defence and security cooperation beyond the bilateral activities of the last 15 years or so. In this sense it is the only successful multilateral organisation in Asia-Pacific. Secondly, the organisation's 'spiderweb' of bilateral defence linkages makes it superficially easy, and seemingly logical, to extend these defence ties. There is also the growing interest in maritime issues on the part of ASEAN members in the face of a declining US military presence. Finally, there is US and even Japanese pressure for the creation of an ASEAN or Southeast Asian security structure to maintain regional stability at minimal cost to the US.[43]

Therefore, the argument is often put that ASEAN, which might include Vietnam [since admitted-Eds] or Cambodia in the near future, will eventually evolve into a true defence organisation like NATO. An additional motivating factor for this could well be the the desire to pre-empt other regional organisations, principally APEC, from shifting the regional focus away from ASEAN. On the other hand, the creation of the ASEAN Regional Forum (ARF) could provide a strong argument against ASEAN moving ahead in this way. With the ARF in place, the need for ASEAN to become a military organisation would no longer be justified.

Furthermore, ASEAN security might be even more delinked because of the historical roots of ASEAN and continued existence of intra-ASEAN suspicions, the disappearance of the Cambodian cement, and the lack of near-term readily identifiable threats. Ultimately, further delinking is the more likely prospect. In the absence of a commonly agreed security threat, ASEAN will lack the political will to cooperate militarily. In contrast to the case of Europe with NATO, which was structured in response to a specific and easily identifiable military threat, ASEAN was created essentially to resolve intra-ASEAN tensions. It has succeeded only because its aspirations were so limited; to ensure that bilateral disputes or tensions were kept in check. With more diffuse contemporary threats,

even the EU had problems identifying common threats before the emergence of the Yugoslav conflict. And even that underlined the differences in approach among EU members to resolution of that Balkan problem. ASEAN suffers from a similar dilemma in identifying and establishing priorities for common military threats. In short, the new world order, despite its uncertainties, contains only a gamut of discernible lower-level threats. There are no clearly visible external military threats to national security on the horizon. Thus, there is no need for the ASEAN members to close ranks.

Moreover, the attraction of other interests, such as Thailand's Golden Peninsula or 'Suwannaphum' concept to make Thailand the hub or economic and political centre of mainland Southeast Asia, or Indonesia's maritime ambitions, threaten what little cohesiveness there is within ASEAN. Consequently, Thailand's present navy chief had to embark on a confidence-building trip to explain to his ASEAN counterparts Thailand's intentions with respect to its naval modernisation program.[44]

ASEAN must also consider the fact that too much defence cooperation might give the wrong signals to the US Any sign that ASEAN is prepared to become militarily self-reliant and to act jointly to shoulder the regional defence burden might encourage the US to speed up its withdrawal of military forces, something which all but one of the ASEAN countries would not like to see happen. Singapore, in particular, regards the establishment of an ASEAN defence arrangement as potentially counter-productive if not inimical to their interests, since the move might encourage the US to reduce its regional military commitments even further.[45]

Moreover, there appears still to be a degree of mistrust among Malaysia, Singapore and Indonesia for various reasons. Singapore still seems to feel vulnerable as a Chinese state caught between two populous Malay neighbours. For instance, Singapore created a minor furore in 1991 over a 10-day Malaysian-Indonesian military exercise in Johore, and accused Kuala Lumpur of 'insensitivity for holding such major manouvres close to the republic' without prior notification.[46] There is still the thorny issue of Singapore's 'forward defence' doctrine, while Indonesian-Malaysian ties have been affected by Malaysian Prime Minister Mahatir Mohamad's regional foreign policy initiatives, which are regarded by Jakarta as a challenge to its leadership role.[47] President Suharto's dismissal of Prime Minister Mahatir's EAEG (subsequently EAEC) initiative is also telling. These frictions probably contributed to Malaysia's stand 'against the establishment of trilateral or regional military alliances'.[48]

With common political aims and common defence objectives no longer present, the old intra-ASEAN rivalries are beginning to resurface, and will require management which is more transparent *vis-a-vis* ASEAN arms

acquisitions. Despite the primacy of economic growth and development objectives in each of the ASEAN countries, even economic cooperation is not expected to be all smooth sailing. In fact, most of the ASEAN countries tend to be economic competitors rather than partners at this stage of their development. Even the ASEAN Free Trade Area (AFTA) is far from problem-free. There are disagreements over the time-frame, the products to be covered, and some countries have been accused by others of slowing AFTA progress.

THE ASEAN-PMC AND NON-MILITARY INITIATIVES: PROCESS, NOT INSTITUTIONS

The ASEAN process of security cooperation (what has been often referred to by insiders as the ASEAN 'way' of doing things) has traditionally stressed the **process** of reconciliation and accommodation. Historically, it has always preferred the process of negotiation at both the official and private levels rather than the establishment of institutions or structures of decision-making. This emphasis on process rather than structure is something which has made it difficult for Occidentals to understand the ASEAN 'way'. The strength of the ASEAN approach is that it is consensual, which ensures that the ASEAN partners will eventually reach some kind of agreement. The weakness of this minimalist or 'lowest common denominator' approach is that while it ensures agreement or compromise on issues, it is fundamentally unable to cope with decision-making. Thus at a time when the new security environment demands that ASEAN make decisions relating to external threat perceptions and common action, the ASEAN 'lowest common denominator' approach is not the right instrument for it.

Another great difficulty with the emphasis on process rather than structures relates to ASEAN currently expanding its security dialogue to include not only its traditional dialogue partners, but potential ASEAN members such as Vietnam and Cambodia, and regional powers such as China and Russia. The ASEAN 'process' of accommodation is not necessarily the most effective instrument for dealing with ASEAN's expanded security agenda. As such, one can argue that the ASEAN 'way' has outlived its usefulness, at least as far as security and defence cooperation in the post-Cold War strategic environment are concerned.

Some analysts have argued that ASEAN is responding to the changed strategic scenario in a very positive and united way, by the establishment of the ASEAN-PMC and the ASEAN Regional Forum to discuss military and defence issues. They see these initiatives as examples of how ASEAN, for the first time since its formation, is moving into the realm of positive security cooperation and away from military alliance. The ASEAN-PMC has indeed dealt increasingly with security and security-related issues.[49]

The ASEAN Regional Forum, agreed to at the ASEAN Ministerial Meeting (AMM) in Singapore in 1993, provides for security dialogue among ASEAN and its dialogue partners; the United States, Australia, Canada, Japan, New Zealand, South Korea and the European Community, three observers (Laos, Vietnam and Papua New Guinea) and two guests (Russia and China). These initiatives are interesting in that they allow ASEAN a multilateral forum in which individual countries can express their views. The ASEAN-PMC and ARF are essentially extensions of the traditional ASEAN dialogue process. They are not designed to enhance ASEAN defence cooperation: the mechanisms are in place to reassure the ASEAN members of each others, intentions as much as anything else.

Thus, the ASEAN-PMC security initiative, and the ARF must be viewed principally as confidence-building mechanisms in an uncertain strategic environment. As instruments for security cooperation, they are likely to be hamstrung by the ASEAN process of accommodation and dialogue. Moreover, the expanded security forum includes countries which have no experience of ASEAN's often extended dialogue process. Nevertheless, perhaps ASEAN's new expanded security agenda could provide the spark and the basis for future institutional structures optimised for decision-making, and not merely dialogue.

For now, however, the ASEAN-PMC remains essentially a 'soft' option for dialogue, not an aid to decision-making. Similarly, the main role of the ARF is merely 'to promote consultations on regional political and security issues'.[50] Perhaps the formation of the ARF was intended to pre-empt any Southeast Asian security pole for APEC as much as anything else. The ASEAN-PMC and ARF initiatives represent ASEAN diplomatic, non-military security cooperation. This is a low-cost, non-military approach which ASEAN is likely to emphasise in the future.

'COLLECTIVE DEFENCE' AND ZOPFAN

Defenders of the arms build-up, especially regional military and political elites, often argue that the present ASEAN defence modernisation is a positive development. Dismissing the notion of an intra-ASEAN arms race, they uphold the view that the current defence modernisation contributes to ASEAN regional resilience and collective strength.[51] Singapore Defence Minister Dr Yeo Ning Hong also lauded the arms purchases made by neighboring Malaysia and Indonesia which would strengthen regional resilience and help keep peace and stability in the ASEAN region.[52]

Even so, the concept of ASEAN collective strength is not to be confused with an ASEAN military pact or even defence community. Admittedly, some do

suggest that the defence build-up by the individual ASEAN countries will eventually result in the aggregation of the ASEAN military strength. Their view is that it will eventually become a defence community of significant power with a 'web' of bilateral and trilateral defence linkages. Any such development will occur only in the long term.[53] Jusuf Wanandi argues that multilateral defence cooperation would not only take time, but would still be outside the ASEAN framework. Admittedly, the demise of the bipolar Cold War blocs and military alliances would make it easier for ASEAN to engage in multilateral defence cooperation.

At the moment, the ASEAN build-up is quite discrete, and the individual parts do not constitute a corporate or collective whole despite talk of 'collective strength'. An ASEAN defence community needs common direction and a common enemy, both of which are lacking at the moment. Some analysts have instead argued that ASEAN and indeed Southeast Asia, are developing into sub-regional security groupings; with Thailand dominating the continent and maritime ASEAN forming another nexus.

> Thailand has concentrated on land warfare to deter continental enemies. Malaysia and Indonesia are acquiring air and naval capabilities to patrol their territorial seas. These developments do not portend a common ASEAN defence arrangement but rather its decomposition into smaller security subgroups.[54]

While one may not agree with the argument that Thailand is concentrating on land warfare to deter continental enemies, the fact remains that ASEAN has yet to find a common focal point for defence. Significantly, during the era of the 'Vietnamese Scare', ASEAN was still unable to work out a common agenda for arms acquisitions, let alone defence planning.[55]

With the end of the Vietnamese threat, ASEAN's common security focus of the 1980s has also disappeared. Thus, the present arms build-up is contributing only very indirectly to ASEAN regional defence resilience. To reiterate, ASEAN defence cooperation is being hindered by the absence of a common strategic perception.

Nevertheless, there are indications that ASEAN is beginning to take an interest in multilateral security cooperation, even if the structure for multilateral exercises is being provided by third parties. For example, Australia is trying to play a prominent role, because Canberra is seeking to engage comprehensively in Asia. This is evident from its new defence emphasis on Southeast Asia as reflected in its 1993 Strategic Review and in the belief that Australia's future belongs with Asia.[56] Significantly, ships and aircraft from three ASEAN countries came together, for the first time, to take part in a multilateral exercise hosted by

Australia. Exercise Kakadu, more correctly a Fleet Concentration Period, included naval forces from Malaysia, Singapore, Thailand and Australia as well as fighter aircraft from Singapore. Indonesia decided send an observer team while the Philippines and Brunei declined to take part.[57]

Interestingly, the former Chief of Australia's Defence Force, General Peter Gration has observed that while ASEAN realises that security must be thought of on a regional basis and

> there must be preparedness to have a dialogue in future regional security structures ... there is no wish to set up some form of collective defence arrangement at all.[58]

This lack of an ASEAN will or readiness to set up any form of defence pact has been a consistent feature of ASEAN foreign policy despite some attempts at change. In 1990, former Indonesian Foreign Minister Mochtar Kusuma-Atmadja in a journal article, argued that the future of ASEAN security lay with Indonesia, Malaysia and Singapore.[59] His call for a formal defence structure was predated by, among others, Singapore.

Professor Mochtar proposed that the Five-Power Defence Arrangements (FPDA) be scrapped and replaced by an institutionalised defence arrangement involving these three maritime nations. Most ASEAN members, however, still find this unofficial proposal unacceptable, because it would mean deliberately dividing ASEAN into a continental centre and a maritime core at a time when ASEAN security concerns were increasingly becoming more diffuse. Additionally, while Singapore has at various times been interested in 'operationalising' the FPDA and turning it into a rather more formal defence pact, Indonesia consistently has been against the concept because of Jakarta's perception that the FPDA was set up principally as a counter to Indonesia.[60]

In this connection, the future of the Zone of Peace Freedom and Neutrality (ZOPFAN) remains highly debatable in the post-Cold War era, with very different attitudes setting Indonesia apart from countries such as Singapore, the Philippines and Thailand. The definition of 'neutrality' is a particularly thorny one, and Singapore, Thailand and the Philippines have demonstrated repeatedly their preference for the US to act as a 'regional balance' against other potentially less benign powers such as China and Japan which might be tempted to fill the US void. Singapore, more than any other regional state, has since 1967 taken as an article of faith that a US presence is crucial for regional peace and stability and that it provides the 'only bulwark' against potential aggressors for the smaller Southeast Asian states.[61]

Former Singapore Prime Minister Lee Kuan Yew, warned for instance that 'if they (the United States) pack up then all the ancient suspicions and animosities

between Japan and China, Japan and Korea, and Korea and China and the fears of ASEAN for China and Japan would shift the focus from the positive we have achieved to defence and security'.[62]

CONCLUSION

In the absence of a common threat, contingency planning by the ASEAN countries has resulted in the introduction of sophisticated hardware. This chapter has argued that although there is no arms race *per se* in the region, such development, if unchecked, could create problems of insecurity between neighbours. Hence the need for more transparency in arms acquisition, if only to allay fears or misconceptions.

This chapter has also argued that defence expenditure in the region will continue to grow as it is more resource driven than threat conscious. The success of indigenous military industrialisation programs will also spur more defence spending as more capital investments are made. In some countries, China for example, not all costs related to defence can be measured – there will be hidden costs.

Nonetheless, while affordability is the major consideration for expanded defence spending in the region, contingency planning, modernisation programs and keeping up with the trends in state-of-the art technology remain strong motivations.

There are strong signs that ASEAN will not become a military alliance or pact. However, as a group of countries which desire regional peace and stability, ASEAN will work towards greater coordination in defence matters. In ASEAN, the concept of comprehensive security goes beyond counting military hardware. ASEAN seeks long term security.

Notes

1. Desmond Ball, 'Trends in Military Acquisitions in the region: Implications for Security and prospects for constraints/ control', a paper presented at the *Seventh Asia – Pacific Roundtable on Confidence – Building Measures and Conflict Reduction in the Pacific*, ASEAN Institutes of Strategic and International Studies, Kuala Lumpur: 6-9 June 1993.
2. Dr Hadi Soesastro, 'Military Expenditure and the Arms Trade', *Asian Pacific Economic Literature*, Vol. 8, November 1994.
3. David Shambaugh, 'The Cash and Caches of China's Brass', *Asia Wall Street Journal*, 22 September 1994.

4. Robert Karnior, 'Asian Arms Build-Up: Regional Powers Strengthen Their hands, *International Defense Review*, Vol. 24, No. 6, June 1991, pp. 611-613.
5. Conversation with Dr Amitav Acharya of York University, Canada.
6. For a detailed discussion on the general ASEAN shift from counter-insurgency warfare strategies in the 1970s to the present emphasis on maritime defence, see J.N. Mak, *ASEAN Defence Re-orientation 1975-1992: The Dynamics of Modernisation and Structural Change*, Canberra: Strategic and Defence Studies Centre, Research School of Pacific Studies, Australian National University, 1993.
7. Ian Anthony, 'The Naval Arms Trade and Implications of Changes in Maritime Law', *SIPRI Yearbook 1988*, Stockholm: SIPRI, 1988, p. 267.
8. N. Lee, and A. Hinge, 'The Naval Balance In the Indian-Pacific Ocean Region', *Naval Forces*, Vol. VIII, No. 117, 1987, p. 164. They noted that it was not until the 1970s that the ASEAN navies began to think of acquiring balanced naval capabilities 'in their modest but consistent ways'.
9. J. McCoy, 'Strategic Sea Change – New Structures in the West Pacific', *Naval Forces*, Vol. XI, No. 11, 1990, p. 76.
10. Robert O'Neill, *Security Challenges For Southeast Asia After the Cold War*, Singapore: Institute of Southeast Asian Studies, 1992, p. 8.
11. 'Asia's Arms Race Gathers Momentum', *New Sunday Times*, 28 February 1992.
12. Prasun Sengupta, 'The Malaysian Navy in Transition', *Military Technology*, 4/92, p. 70. See also Stuart Slade, 'Naval Construction in the ASEAN Area', *Naval Forces*, Vol. XII, No. VI, 1991, p. 18.
13. 'Wasted Fleets. PM: US Naval Deployments in East Asia Unnecessary', *Star*, 23 March 1994.
14. In 1992, the then head of the Malaysian Armed Forces, Yaacob Mohamed Zain, observed after a tour of China that he did not foresee any regional power 'with the exception of China, that could fill the 'vacuum' left by the US' and that the PRC had the potential to be more 'assertive' in the South China Sea. 'Need for ASEAN to be militarily strong', *New Straits Times*, 14 February 1992. And the former head of strategic studies at the Malaysian Armed Forces Defence College, Abdul Razak Baginda, said in 1991 that China was still a threat to Malaysian security. His view, in fact, generally reflects that of the Malaysian Armed Forces even today. See 'China Still Seen as a Threat to our Security', *New Straits Times*, 7 December 1991. There is a different view, however. Najib Razak the Defence Minister, has recently argued that China was no longer a threat to Malaysia (see his keynote address to the Kuala Lumpur Forum on Future Generations Meeting, 3-5 August 1994).
15. 'China's growing power stirs fear', *New Straits Times*, 12 January 1993.
16. 'Institute: China may break up', *Star*, 11 March 1994. See also Robert A. Scalapino, 'A Framework for Regional Security Cooperation in Asia', *Korean Journal of Defence Analysis*, Vol. V. (2), Winter 1993, p. 13.
17. Scalapino, *op. cit.*, p. 27.
18. Bernard K. Gordon, 'Japan: Searching Once Again', James C. Hsiung, ed. *Asia Pacific in the New World Politics*. Boulder, Co: Lynne Rienner Publishers, 1993, p. 55.
19. Leszek Buszynski, 'ASEAN Security Dilemmas', *Survival*, Vol. 34, No. 4. Winter 1992-93, pp. 94-95.
20. Coral Bell, *The Post-Soviet World: Geopolitics & Crises*. Canberra: Strategic and Defence Studies Centre, Research School of pacific Studies, Australian National University, 1992, p. 29.
21. *ibid.*, p. 31.
22. 'S'pore Worried By US-Japan Tensions', *Nation*, 2 July 1993.
23. Many analysts believe, however, that Southeast Asia is still worried by the prospects of a rearmed Japan and argue that any Japanese military 'breakout' would be most counter-productive in Southeast Asia because of regional sensitivities. The region, moreover, is becoming an increasing focus of Japanese attention because of 'diminishing returns in North America and Europe'. Richard C. Thornton and Bruce A. Babcock, 'Japan's Response To Crisis: Not With A Bang But With A Buck', *Global Affairs*, Winter 1993, p. 7.
24. For a description of Indo-Malaysian strategic ties, see J.N. Mak, 'The Indian Navy: Friend or Foe', *Asia-Pacific Defence Review*.
25. Sandy Gordon, *India's Strategic Posture: 'Look East' or 'Look West'?* Canberra: Strategic and Defence Studies Centre, Research School of Pacific Studies, Australian National University, 1991.
26. Under India's 'South Asia Doctrine' or 'Indira Doctrine', New Delhi has set itself as the final and only arbiter of South Asian domestic security issues. See Dieter Braun, 'Asian Power India: A New Equation', *Aussen Politik*, Vol. 41, 2nd. Quarter, 1990, p. 171.
27. Richard L. Grant, 'The 1990s: A Decade of Challenge for the Asia-Pacific', *Report of a Meeting of the Pacific Forum/CSIS Network of Asia-Pacific Policy Research Institutes*, Honolulu, 1991. p. 6.
28. *Asian Security 1993-94*, Research Institute for Peace and Security (Tokyo) London: Brassey's, 1994, p. 166.
29. China and Taiwan are laying claim to the entire South China Sea, with Vietnam claiming the whole archipelago. The Philippines, Malaysia and Brunei also lay claim to parts of the Spratlys. See B.A. Hamzah, *The Spratlies: What Can Be Done to Enhance Confidence?* Kuala Lumpur: Institute of Strategic and International Studies, 1990.
30. 'ASEAN Declaration On The South China Sea', *Joint Communique Of the Twenty-Fifth ASEAN Ministerial Meeting*, Manila. 22 July 1992.
31. '10 Nations to Discuss the Spratlys', the *New Straits Times*, 29 June 1992.
32. Desmond Ball, 'The Council for Security Cooperation in the Asia Pacific (CSCAP)', *The Indonesian Quarterly*, XXI/4, p. 496.
33. 'Indonesia content to stay military dwarf', *Business Times*, 7 February 1994.
34. Singapore also concentrated on contingency planning and a policy of deterrence against its neighbours during the early years of its independence, in the 1960s. Tim Huxley, 'Singapore And Malaysia: A Precarious Balance?', *The Pacific Review*, Vol. 4, No. 3, 1991.
35. 'Jen Explains Why We Still Need Defence Forces', *Sunday Star*, 21 March 1993.
36. 'Najib: Deterrence is Cornerstone of Malaysia's Defence Doctrine', *New Straits Times*, 13 July 1993.
37. *ibid.*
38. David B.H. Denoon, 'Alternative Directions for US Strategy in the Changing Pacific Basin', James C Hsiung, ed. *Asia Pacific in the New World Politics*. Boulder, Lynne Rienner: 1993, p. 178.
39. Colin S. Gray, 'The Arms Race Phenomenon', World Politics, Vol. 24, 1972. p. 41, cited in Michael Sheehan, *The Arms Race*. Oxford: Martin Robertson, 1983, p. 10.

40. For a study of the relationship between economics and defence expenditures in ASEAN, see Geoffrey Harris, 'The Determinants Of Defence Expenditure In The ASEAN Region', *Journal of Peace Research*, Vol. 23, No. 1, 1986.
41. For an assessment of ASEAN conventional warfare capabilities see J.N. Mak, 'Armed, But Ready? ASEAN Conventional Warfare Capabilities', *Harvard International Review*, Vol. XVI, No. 2, Spring 1994.
42. Tim Huxley, *Insecurity in the ASEAN Region*, Whitehall Paper Series. London: Royal United Services Institute for Defence Studies (RUSI), 1993, p. 11.
43. Thomas L. Wilborn, *Stability, Security Structures, and US Policy for East Asia and the Pacific*. Carlisle Barracks, Pa: Strategic Studies Institute, US Army War College, 1993.
44. J.N. Mak and B.A. Hamzah, 'Navy Blues', *Far Eastern Economic Review*. 17 March 1994, p. 30.
45. Michael Vatikiotis, 'Forging Stronger Links: ASEAN Moves Closer To Formalizing Security Ties', *Far Eastern Economic Review*. 29 April 1993, p. 26.
46. 'Ministry: Singapore Was Aware Of Joint Exercise', *New Straits Times*, 15 August 1991.
47. Sheldon W. Simon, 'The Regionalization Of Defense In Southeast Asia', *NBR Analysis*. Vol. 3, No. 1, June 1992, p. 15.
48. 'Malaysia Rejects Military Alliances', *New Straits Times*, 29 February 1992.
49. For a discussion of the ASEAN-PMC as a forum for an institutionalised security dialogue, see Jason D. Lewis, 'Southeast Asia – Preparing For A New World Order', *The Washington Quarterly*, Vol. 16, No. 1, Winter 1993, pp. 180-190.
50. 'Political, security forum to be set up', *New Sunday Times*, 25 July 1993.
51. The Malaysian Defence Minister, Najib Tun Razak, for example, said that Malaysia's purchase of MiG 29s and F-18s 'would, in fact, enhance the collective security in the region'. 'Attack Helicopters May Be Next', *New Sunday Times*, 18 July 1993.
52. 'KL purchase of Russian jets a positive move', *Business Times*, 5 July 1993.
53. Jusuf Wanandi, 'ASEAN And Security Cooperation In Southeast Asia', IIGP Special Report. Tokyo: International Institute for Global Peace, March 1991, pp. 11-14.
54. Simon, *op. cit.*, p. 6.
55. Although there have sometimes been calls for joint procurement and weapons standardisation within ASEAN, joint procurement has never been attempted. In fact, ASEAN arms industries 'jealously guard their prerogatives' and common weapons systems such as F-5, F-16 and A-4 aircraft and Scorpion light tanks were acquired as a result of parallel requirements rather than coordinated acquisition. Simon, *op. cit.*, p. 8.
56. 'Australia Shifts Defence Emphasis', *New Straits Times*, 22 February 1994.
57. 'ASEAN Participation In 'Kakadu' Exercise', *Jane's Defence Weekly*, 27 March 1993, p. 11.
58. Frank Cranston, 'The Jane's Interview: Australian Chief of the Defence Force Gen. Peter Gration', *Jane's Defence Weekly*, 27 March 1993, p. 32.
59. Mochtar Kusuma-atmadja, 'Some Thoughts on ASEAN Security Cooperation', *Contemporary Southeast Asia*, Vol. 12, No. 3, December 1990.
60. *ibid.*, and Wanandi, *op. cit.*, p. 11.
61. *Defence of Singapore 1992-1993*, Singapore: Public Affairs Department, 1992, p. 12, and Bilveer Singh, 'Singapore's Defence Policy In The Post-Cold War Era', *Strategi*, Vol. 1, No. 2, July 1992, p. 210.
62. 'US Pledges Stronger Ties With Asean', *New Straits Times*, 18 May 1993.

6 ASEAN Naval Power in the New Millenium

DEREK DA CUNHA

TODAY, Southeast Asia, though experiencing a rare period of peace, is afflicted with strategic uncertainties of a kind that makes any judgment of the region's future problematical. These uncertainties relate, *inter alia*, to the consequences of the slippage in the credibility of the United States – the world's sole remaining superpower – as a stabilising influence in Southeast Asia and the wider Asia-Pacific (the US commitment to stability on the Korean peninsula being the notable exception to this general trend); the advent of a second wave of nationalism, premised on culture, ethnicity and religion, sweeping through the region; and the spectacular economic rise of a large northerly neighbour (China) with attendant regional unease as to its future strategic intentions.

Amid such uncertainty, most of the states of Southeast Asia have in recent years stepped up the modernisation and, yes, expansion of their military capabilities. (Indeed, the region is one of the last few in the world where aggregate defence budgets continue to expand in the post-Cold War era.)[1] Of these capabilities, those related to the maritime sphere have attained particular prominence, not least because of the highly visible nature of warships. In hindsight, this emphasis might seem hardly surprising as the Southeast Asian operating environment is largely a maritime one. However, the emphasis just ascribed is of relatively recent origin and, more than anything else, really has to do with a reallocation of resources within regional armed forces as a result of two phenomena, among others:

a. a catch up phase for Southeast Asian, largely ASEAN, navies as a result of a higher priority given earlier to armies and air forces in regional defence planning and development; and

b. a switch in emphasis from land based threats, exemplified in the doctrine of counter insurgency warfare (CIW), as a consequence of the winding-down or termination of communist terrorist activities in the jungles of Thailand, Malaysia and the Philippines, and the pull out of Vietnamese troops from Cambodia.

These phenomena have set the scene for the steady growth of maritime power in its many dimensions by the ASEAN states well into the 21st century. This chapter will attempt to conceptualise the naval power of the ASEAN states (Vietnam being excluded for practical reasons) and their operating environment in the new millennium. The key operative word here is 'conceptualise'. As such, the chapter will largely eschew details ('bean counts') of orders of battle, except where they are germane to the key arguments, and will instead concentrate primarily on concepts and analysis, as this (in the writer's view) is likely to be a more worthwhile exercise.

GENERAL FUNCTION OF ASEAN NAVIES

As a general rule, the structure of navies is usually a function of both their operating environment and of national interests, defined broadly. This is certainly the case with the ASEAN navies. The operating environment for these navies is, however, not a single and clearly defined one, but rather is multi-faceted and amorphous in nature. Prioritised according to relative importance, the current generally specified areas of geographic focus and responsibility for the ASEAN fleets are as follows:

a. the South China Sea;

b. the Strait of Malacca and other secondary straits (like the Strait of Singapore, and the Lombok, Makassar Sunda and Ombai Wetar straits);

c. the sprawling archipelagic environs of the Philippines and Indonesia; and

d. the Andaman Sea.

These geographic areas pose their own peculiar operating challenges and problems for the ASEAN navies, and these either determine or constrain fleet design and structure. Within these areas, three broad and general functions, at the conceptual level, can be identified for the ASEAN navies:

a. to carry out routine day -to -day operational tasks like sovereignty patrol (related to the issue of fisheries protection and illegal immigrants, for example), surveillance, and search and rescue;

b. to act as a credible deterrent force;

c. to function as a warfighting force in the event of deterrence having failed.

The actual weight given to each of these functions differs markedly among the ASEAN navies and merely reminds one that ASEAN is not a monolithic organisation; since member states have different interests and threat perceptions. ASEAN's chief *raison d'être* political utility – the regulation of inter state relations – rather than as an entity with a strategic rationale (though one cannot discount the possibility of such a rationale crystallizing in the future, as will be elaborated later).

All six ASEAN navies have, in varying degrees, capabilities to carry out the first function, that is routine day to day operational tasks. Indeed, most ASEAN warships are of a patrol function nature, intended to give credibility in coastal defence and not much beyond that.

As to the second function, the Thai and Singaporean Navies might be said to have developed credible deterrent capabilities, while the other four navies are, in various stages of attempting to move in that particular direction, with the Royal Malaysian Navy leading the way.

Finally, as for the third function – a significant capability as a coherent warfighting force – again only the Thai and Singaporean Navies have forces of any size in that regard, as highlighted in the extent of their repertoire of anti ship weaponry and amphibious warfare units, which provide a not unimportant forward defence option.

Apart from the obvious factor of hardware considerations, the geographic extent of maritime space and the perception of the limits of fleet operational range have largely determined each of the ASEAN navies' ability to fulfill the three general functions essayed above. In that regard, Singapore, for example, because of its relatively small geographic size, has territorial waters which many would construe as being easier to defend than say the other five ASEAN states and, as such, the Republic of Singapore Navy's ability to acquit all three functions becomes comparatively less onerous. To that extent, the simple mathematical construct of 'force to space ratio' is a consequential consideration when determining the effectiveness of each of the ASEAN navies, or for that matter the effectiveness of any navy.

In optimising the force- to- space ratio to their advantage, the ASEAN navies have done several things in recent times, and will continue to do so in the future. One of these has been in the area of refinements to, if not total re location of, fleet units and basing infrastructure. With the South China Sea the principal maritime focus for the navies, fleet basing is increasingly oriented towards that domain.

Malaysia's reorientation of its basing from the Strait of Malacca, at Lumut, to the South China Sea, at Tanjung Gelang, is a case in point.[2] So, too, is Singapore's decision eventually to re-base the RSN fleet at Changi (which also provides deepwater berthing for the eventual deployment of submarines) by the

turn of the century. The Royal Thai Navy's decision, ultimately, to base its soon-to-be-operational helicopter/STOVL carrier at Sattahip on the Gulf of Thailand against an earlier plan to homeport it on the Thai western seaboard (facing the Andaman Sea) is a further manifestation of this trend to optimise fleet operations for South China Sea deployments and contingencies. In all instances, a premium is being placed, by the ASEAN navies, on the ability to deploy at a moment's notice, with a 'short-time -towards- target' capability uppermost in mind.

Such general operating requirements will continue to obtain for the ASEAN navies into the next millennium, as they attempt to grapple with the geographic dimensions of the operating environment. That environment will get more murky, because of considerations of evolving geostrategy, to which we now turn .

GEOSTRATEGIC CONSIDERATIONS OF THE OPERATING ENVIRONMENT

The United States in decline. As noted earlier, one of the strategic uncertainties facing Southeast Asia involves the perceived, if not actual, diminishing role of the United States in underpinning regional security and stability.[3] Here the issue is not simply one of a reduced American military presence forward deployed in Asia -Pacific, but also one of the perceived increasing disinclination by the US to get embroiled in what it would see as 'local squabbles' in the region.[4]

These squabbles centre largely on the contending claims to the Spratly Islands, and the 'domestic' China Taiwan spat, with all its ramifications for regional instability. Even where official US statements reaffirm a commitment to keep open key sea lines of communication in the region,[5] there are increasing regional doubts about the veracity of such statements – doubts engendered by the mixed signals which are constantly sent out by senior US officials, especially those at the top of the military hierarchy (the former Commander in Chief of the US Pacific Command, Admiral Richard Macke, and the former Vice Chairman of the US Joint Chiefs of Staff, Admiral William Owens, being the worst offenders in this regard). [6]

With absolute and relative American strategic decline now in train, and likely to become more evident in the years ahead, fear of a power vacuum being created in Southeast Asia is giving impetus to the regional defence modernisation and build up. It seems almost an unstated assumption that rather than let the prospective power vacuum be filled by another, possibly less benign, great power, the Southeast Asian states are likely to fill that vacuum on their own. [7] And the most logical and appropriate way to fill that vacuum is within the maritime sphere, for that is where the vacuum will occur.

China playing the great power game. Secondly, and relatedly, the geostrategic environment in Southeast Asia will increasingly evolve in the direction of growing Chinese power in its various dimensions; not least military. While the ASEAN states have largely reconciled themselves to the prospect of China playing the great power game in a more obvious manner, they will also likely want to blunt and neutralise the sharper elements of that phenomenon, if it leads to such undesirable developments as territorial encroachment and interfering with international maritime traffic. In that connection, China, depending on its future regional behaviour, could well provide the spark for a strategic rationale to ASEAN. That is to say, the ASEAN states could see a greater coherence in their strategic outlook, indentifying a common issue (China) and *ipso facto*, formulating an increasingly unified strategic policy to deal with that issue.

To that extent, where previously it was inconceivable for the ASEAN states to contemplate multilateral defence links amongst themselves (choosing instead a so called 'spider's web' of bilateral defence links), the evolving geostrategic environment, which sees China ascendant and the US on the descent, could well make such links a possibility. And it would be in the naval arena that these links would manifest themselves to any degree of significance and utility. The contribution by ASEAN navies of numbers of warships to a so- called Standing ASEAN Naval Force (SANF) would be an interesting concept; one that might seem inconceivable today, but might prove to be otherwise in the new millenium. A prospective SANF would be a one issue force intended to deal with a specific and localised contingency (which would affect all ASEAN states) and nothing more. Questions of operational control of such a force would naturally arise, but there is no reason why command authority could not be periodically rotated among the ASEAN navies.

Sino -Japanese strategic competition. The prospects of a SANF might be underpinned by the spectre of Sino- Japanese strategic competition, in all its manifestations, not least naval. As has been stated by some observers, at no time in history have both China and Japan been powerful simultaneously, as they are today. And, when both countries, culturally and historically, have not taken kindly to the other, there has been a real possibility of significant strategic rivalry taking off between the two states. This, in essence, has to do with which of the two countries attains preeminent power in Asia-Pacific the very notion of which has serious implications for states in the region.

Any Sino -Japanese strategic competition in the naval sphere is likely to spill over into Southeast Asia, and the ASEAN states would probably be anxious to counteract, if not dissipate, the effects of that development. The ASEAN states'

own naval modernisation and the increasing coherence of their security outlooks could, together with an adroit diplomacy, be partial answers to the deleterious effects accruing from a Beijing Tokyo strategic chasm.

If the notion of a coherence in strategic viewpoint among the ASEAN states sounds bizarre, when the member states have their own latent disputes with each other, then the future geostrategic environment will seem even more bizarre and confused when considering two other developments: a possible and real rebound of Russian naval power in the Pacific which impacts on the Southeast Asian theatre, and a sudden preoccupation by the ASEAN states with events on the region's western flank – the Strait of Malacca, Andaman Sea and the Indian Ocean.

Russian naval rebound. Three years after the dissolution of the Soviet Union, its principal successor state, Russia, continues to be inward looking in its profile, trying to grapple with a multiplicity of bedevilling domestic social and economic problems, and in its relations with the so called 'near abroad' (the former states of the USSR). This has left Russian military power, as a function of foreign policy, inert at best, and decaying at worst.

In the Far East, Russia still deploys substantial military power in its Siberian and coastal territories. However, operational readiness of most Russian units is at a low ebb (as low as 10 -15 per cent in some cases). This is especially so for the Russian Pacific Fleet, many of whose vessels rarely put to sea these days and, for want of maintenance and repair, are merely rusting away in port.

But, juxtaposed against that, there has been a continued, and surprising (surprising because of national resource constraints), Russian warship building program. This has seen some of the most sophisticated surface combatants and submarines (like the Akula Class nuclear-powered attack submarine and Oscar II Class nuclear-powered cruise missile carrying submarine) being assigned to the Pacific Fleet. The mere fact of this continued assignment of new Russian warships to the Far East has led analysts to speculate on the prospects for a significant rebound of Russian naval power in the Pacific. Indeed, many analysts are agreed that it is not a matter of 'if', but rather 'when' that rebound will occur.

Once the rebound of the Russian Pacific Fleet takes place it will have implications for the Southeast Asian region in general and the ASEAN navies in particular, and for two reasons:

a. The 21st century will see increasing strategic linkages between Northeast Asia (where Russian power in Asia essentially resides) and Southeast Asia a connection which is not readily apparent today.

b. The continued use by the Russian Navy and the intelligence arm of the Russian General Staff of the Vietnamese base at Cam Ranh Bay.

As to the first point, the geographic compartmentalisation that currently characterises Asia-Pacific strategically, in which the security issues of Northeast Asia (the Korean peninsula, for example), Southeast Asia (the Spratly Islands), and the South Pacific (French nuclear testing), are largely seen in sub regional, rather than region wide, terms will become less and less obvious in a more and more inter dependent world. This geostrategic trend will occur simultaneously with a transition from a unipolar world (of one superpower, the US) to a multi polar one, characterised in Asia -Pacific by five poles – China, Japan, Russia, the US, and the ASEAN states (in combination). The reactivation of Russian power, and its coming into play in the Pacific strategic balance, must be seen in terms of the uncertainties related to Russia's domestic political situation. The key question is whether there will be a return to a Russia with imperial ambitions, and what that might bode for the Asia-Pacific region.

The fact that the Russians are tenaciously still clinging onto their Vietnamese naval foothold, at Cam Ranh Bay, seems suggestive that they have not ruled out the possibility of exercising some 'old style' state influence in Southeast Asia in the not too distant future, once the rebound of their military capabilities commences. Indeed, in early 1995, Russian Deputy Foreign Minister, Aleksandr Panov, confirmed that there were still some 350 Russian naval and intelligence personnel at Cam Ranh and that the decision to hold onto the base was one essentially taken by the Russian Defence Ministry, over the objections of the Foreign Ministry. This seems to illustrate the current divisiveness within Russian institutional and bureaucratic politics, and the residual influence of the armed forces in foreign policy-making.

The prospect of a return to some element of Russian naval activity-and its uncertain disposition in Southeast Asia will be yet another factor to be considered by the ASEAN states when formulating their naval development programs and policies in the next century.

ASEAN will look uneasily at its Western flank. If all the above geostrategic developments real and hypothetical (some would say, imagined) – were not enough to tax the ASEAN states' maritime calculations to the limit, those states would have to contend with the further issue of developments on their Western flank, essentially the Indian Ocean, and how they might impinge on Southeast Asian security.

This, in short, comes back to the issue of strategic linkages between regions in an increasingly interdependent world. The region, from the Persian Gulf to the

Andaman Sea, is the repository of enough security concerns and flashpoints which could conceivably adversely impact on the sea lines of communications making their way through the Strait of Malacca and the South China Sea. But what are the apparent concerns to be noted? Chinese influence in Myanmar could well be one concern; and so too would Indian regional aspirations, however improbable, channelled through a revitalised Indian Navy and springing from outposts at Fortress Andaman and Nicobars (FORTAN).[8] Any reasonable defence planner and analyst in any ASEAN state would have to keep these potential issues in mind when looking at the future, ten to twenty years from today. Not to do so would be a trifle irresponsible.

NOTABLE DEVELOPMENTS IN FLEET CONCEPTS & FORCE STRUCTURE

Submarine acquisitions. Against the evolving geostrategic backdrop speculatively sketched out above, what then is likely to be the shape of ASEAN navies in the years ahead? Clearly, with geostrategic calculations to the fore, increasing operational requirements in the naval sphere will be translated into a need for more balanced naval forces. One of the more important elements in achieving increasingly balanced fleets would be the development of a sub surface arm, which would give ASEAN navies greater survivability and important stealthy strike qualities. As I have articulated elsewhere,[9] by the year 2010, I believe that five ASEAN navies will, in aggregate, deploy about 20 diesel-electric submarines. The 'guesstimate' of submarines for each country is as follows:

Table 1 – Guesstimate of diesel-electric submarines deployed by ASEAN navies by the year 2010

Indonesia:	4
Malaysia:	4-6
Philippines	2
Singapore:	4
Thailand:	4 6
TOTAL:	18 22

Possible submarine types would include the British Upholder Class, the Russian Kilo Class, the Swedish Gotland Class and the German Type 205 Class.

A total of 20 diesel-electric submarines would represent a significant jump from the two boats currently operated by just one country, Indonesia. This begs the question: is the guesstimate realistic? Taking the lengthy time span of 15 years

from today, and the availability of national resources to procure such expensive items as submarines (particularly when most ASEAN economies are expected to almost triple in size by the year 2010) the guesstimate is not unrealistic. The question is whether it is feasible to operate that number of boats in the confines of the South China Sea and adjacent waters? That is a more difficult question to answer, but it is countered by the link to one of the geostrategic points noted earlier. That is to say, such significant numbers of submarines would be exactly what would be required to fill the prospective power vacuum in Southeast Asia in the wake of a diminished US strategic role.

Increased need for intelligence. The other area in which greater resources would likely be funnelled in by the ASEAN navies is maritime intelligence gathering capabilities. Here, some states will move onto the high-technology road fairly rapidly, by sending aloft spy satellites to keep an eye on the maritime highways. Other, more usual and less high-technology intelligence-gathering methods would be the deployment of increasing numbers of maritime patrol aircraft, which would help to relay data on a real-time basis to shore-based units and floating commands. Additionally, it is most conceivable that a number of ASEAN navies might follow the Russian Navy's example by using dedicated AGIs (auxiliary-general-intelligence ships) to facilitate close-in signals intelligence (SIGINT) collection in the heavily-trafficked waterways of the South China Sea.

These prospective enhanced intelligence capabilities will clearly improve naval targeting, which is currently a severe deficiency in some of the ASEAN navies; made all the more difficult by the enormous amount of shipping in Southeast Asian waters. They will also aid, though not resolve, the command and control (C2) matrix which, again, is currently a weakness faced by a number of ASEAN navies and is a more general problem throughout the various regional armed forces.

Combined arms and maritime air operations. Finally, another development that will take on increasing significance in the Southeast Asian naval sphere is the use by the ASEAN states of land-based air power for maritime strike operations, as part of the now fashionable doctrine of combined arms warfare. In that regard, the military establishments within the ASEAN states will use the physical geography of Southeast Asia to their advantage. Maritime air operations (MAO) are a viable way to project power at sea from littoral bases. The relatively short distances to the South China Sea from land areas makes the use of aircraft in anti-surface operations both logical and economical; and ASEAN air forces and navies are increasingly integrating in order to have such capabilities.

Perhaps more importantly, the use of such land-based air power at sea provides the kind of equaliser to the larger regional navies (of the great powers) and puts a question mark on their ability to control the waters of Southeast Asia (a point which returns yet again to the geostrategic considerations dealt with earlier). [10] However, the employment of MAO would also be symptomatic of the fact that the ASEAN navies, even in the 21st century, are likely to have good sea-denial, but poor sea-control, capabilities Possesion of the latter would require significant investments in and a large number of, major surface combatants which, for various reasons (not least to do with the survivability of such platforms) is seen as neither feasible nor economical.

CONCLUSION

In sum, what seems clear from the above analysis, is that the ASEAN navies in the 21st century are likely to have their work cut out. They will, however, respond quite significantly to the challenges of the changing geostrategic environment not merely through hardware acquisitions, but also through employment of new maritime concepts which will allow for effective solutions and options to problems emanating from an increasingly crowded operating environment. The geostrategic setting will take some time to work itself out. But whatever form it finally takes, one thing is sure, the old foreign policy adage still applies: there are no permanent friends, just permanent national interests. And, in that connection, the ASEAN navies are likely to be increasingly important custodians of the interests of their various nation states.

Notes

1. And where defence budgets have not expanded, warfighting capabilities certainly have. On this point see Derek da Cunha, 'The Need for Weapons Upgrading in Southeast Asia: Present and Future', a paper prepared for the Defence Asia '95 Technology Conference, Bangkok, 14-15 September 1995.
2. Derek da Cunha, 'Major Asian Powers and the Development of the Singaporean and Malaysian Armed Forces', *Contemporary Southeast Asia*, Vol. 13, No. 1, June 1991, p. 68.
3. Derek da Cunha, 'Hole in the US Pacific Command's Arguments About Staying in the Region', *The Straits Times*, 25 January 1995, p. 28.
4. Derek da Cunha, 'The US Presence in the Asia - Pacific: Nodding Off', *The Straits Times*, 9 March 1995, p. 28.

5. Eduardo Lachia and Urban C. Lehner, 'US Ponders Bolder Stance in South China Sea Dispute', *Asian Wall Street Journal*, 26 April 1995, p. 1.
6. John McBeth, 'Who Knew What?' *Far Eastern Economic Review*, 6 April 1995, p. 15; Derek da Cunha, 'US Engages in "Admiral Diplomacy" ', *ISEAS Trends*, No. 57, a supplement to the *Business Times*, (Singapore) Weekend edition, 27-28 May 1995, p. 1.
7. Derek da Cunha, 'Bigger and Stronger Asean Defence Forces on the Cards', *The Straits Times*, 27 September 1995, p. 37.
8. On FORTAN see Ross Munro, 'Indian Naval Build-up: Mixed Signals', *ISEAS Trends*, No. 5, a supplement to *The Straits Times*, 31 January 1991, p. 1.
9. Derek da Cunha, 'Bigger and Stronger ASEAN Defence Forces', *op.cit.*, p. 37.
10. Derek da Cunha, 'New Balance of Naval Power in Asia - Pacific', *The Straits Times*, 7 January 1995, p. 34.

7 India's Navy – a Prophylactic for Seablindness in the Indian Ocean

MIHIR K. ROY

THE INDO-AUSTRALIAN LEGACY

INDIA and Australia share many legacies. Both countries have colonial pasts and as one report has it, the Governor of Bengal supplied suji, sugar, black-tailed sheep and even Bengal rum to the Botany Bay settlement in 1788. And even more interesting is the report by the Governor of Western Australia, who had been in Madras and subsequently wrote wistfully to the Secretary of State for Colonies in London, 'I hope you will take an interest in the poor Cinderella of Australia. We hope to find gold and then Cinderella will ride in a gilded chariot drawn by kangaroos'. Today, it appears as though the wish has been granted and the chariot is well under way, on the sports field, industrially and economically.

Furthermore, the navies of both countries were underwritten, controlled and dictated from Whitehall and however munificent Britain was, the nascent navies were prevented from developing into self-reliant regional forces. And interestingly, many Indian members of parliament, particularly from the populous Indo-Gangetic plains, who have hardly seen the seas, drew ready comparisons between our two navies – even if for the purpose of restricting the Indian naval budget.

Other similarities between the two countries include the continuing parliamentary form of government, the English language, legal and bureaucratic systems and similar perceptions in educational, agricultural, environmental, mining and other maritime activities, as recently stated during the Australian-Indian Council meeting in New Delhi. But, with Australia turning West and India looking East after the end of the Cold War and of apartheid, and with the ongoing economic liberalisation of a region of 1.6 billion people, this chapter will begin by highlighting differences in national psyche, illustrating the role of navies in third world countries in terms of national development and national security (two sides of the same coin) for influencing national strategic perceptions and force levels.

PSYCHE OF INDIA'S SEABLINDNESS

The water mass, significantly named after India, washes the shores of three continents and of 32 littoral countries and abuts 11 hinterland states, wherein live one third of the world's population. India has a glorious maritime heritage as observed from ancient scriptures, archaeological relics, literature and arts as well as religion and culture which extended as far as Bali and the Mekong Valley; the meeting place of the two oldest civilisations – India's and China's. The subcontinent was richly endowed with exotic goods and Greeks, Romans, Phoenicians, Arabs, Jews and Chinese came to trade in the ocean which the Arabs called 'Bahr-I-Hind'. The great maritime empires of Sri Vijaya, Sailendras, Cholas and Satyavananas spread the Indian way of life to Sumatra, Malaya, Champa and Kambuja from the 5th century onwards.

Seablindness, however, gripped India from the time of the invasions through the Hindukush passes which became the cynosure for the Mughals for the defence of the lush plains of Hindustan. Hence, the shores of peninsular India were left unattended, enabling Britain to hijack the Mughal throne and use 86 per cent of the wealth of this region, through maritime hegemonism and seaborne conquest. In 1857 India passed on to the British Crown, but Her Majesty's Indian Navy was made directly responsible to the Admiralty in London and not to the Viceroy or his Commander-in-Chief in Delhi. Even so, the Government of India was instructed to pay £490,000 in 1918 with an additional £1,680,000 as capital outlay until 1939. Seapower was thereby kept on a tight leash by Whitehall and it was not surprising that Indians, who were superstitious about crossing the 'Kalpani' (seas), regarded the oceans as a colonising medium for exploitation and colonialism, which further prejudiced their understanding of the seas.

The ingredients of seapower were, therefore, monopolised by the Royal Navy, with the Mughal Durbar remaining focused on the Himalayan passes. India was soon recognised as the brightest jewel in the Imperial Crown, which enabled Westminster to achieve industrial, economic and other empire related objectives. The price paid included 36,000 Indian soldiers killed and 70,000 wounded in the service of the Crown. Incidentally, the valour of the Indian soldiers was acknowledged by the award of 14 Victoria Crosses and 99 Military Crosses.

NON-USE OF THE SEAS

The continuation of sea blindness, even after Independence, was due mainly to India's preoccupation with conflicts in the Himalayas. Naval plans, modest as they were, depended on good monsoons and consequent funds allocation. The glaring budget asymmetry among the three services affected both maritime development and national security. For example, India's highly professional

three-dimensional Navy was sidelined in the 1961, 1962 and 1965 conflicts with Portugal, China and Pakistan respectively. It was only in 1971 that the Indian Navy took the initiative and attacked Karachi with missiles and blocked both Chittagong and Chalna ports in East Pakistan. This prevented a local 'Dunkirk' and resulted in the surrender of the Pakistani Flag Officer and 92,000 soldiers.

The non-use of the navy continued thereafter, with India failing to exercise her international right to protect her merchantmen – a primary role of navies. As a result, nine Indian tankers and bulk carriers were sunk by missiles during the Iran-Iraq War. By contrast, the United States reflagged and escorted the Kuwaiti tankers safely out of the Gulf. Additionally, during the Kuwait-Iraq war of 1990 a Shipping Corporation of India vessel, carrying food and medical supplies for stranded Indian citizens, was boarded and searched on the high seas, despite its mission having United Nations (UN) clearance. This occurred primarily because India lacked the will to use her navy for escort duties in support of international conventions.

Similarly, the non-use of the Indian Navy's impressive sealift capacity, lying idle at Bombay, to evacuate Indian citizens from Kuwait and Jordan went unremarked by the media, which was perhaps equally seablind. The Indian Navy's assistance to the Indian Peacekeeping Force (IPKF) in Sri Lanka, the arrest of Maldivian insurrectionists and peacekeeping operations in Somalia were due more to unavoidable reaction than to measured acts of underwriting seapower.

Again, India's sea blindness reduced the priority for expanding ship building, modernising ports and enlarging merchant shipping and fishing fleets. Consequently, India's merchant fleet remained stagnant at 6.5 million tons, which is less than two per cent of the world tonnage. Moreover, limits on external commercial borrowing, lack of incentive for investors, non-exemption of income tax for crews of Indian vessels and duty on the import of ship repair materials, precluded fair treatment for India's merchant shipping which, nevertheless, is a major foreign exchange earner.

India thereby surrendered her advantages of sitting astride shipping routes and thus being able to influence cargo rates, chartering charges, port dues, multimodal transport and containerisation and instead was burdened with high transaction costs. An example of this is that the freight rates from London to Singapore are less than those from Bombay to Singapore. Such blinkered policies have been in marked contrast to those of Japan, Taiwan, Korea, Hong Kong and Singapore and now China; all of which have forged ahead by using the seas to leap into the league of developed countries.

THE ROLE OF NAVIES IN DEVELOPING COUNTRIES

Many Masters in India's merchant marine are former naval officers who earned their 'masters' tickets' after leaving the Service. Further, the Chairmen and Managing Directors of the major shipbuilding yards and some Port Trusts are former naval officers. Because in developing countries it is not cost-effective to duplicate training or technologies, the Navy is also responsible for marine engineering, electrical and management colleges affiliated to Universities and is able to award degrees. Similarly, institutes for diving, seamanship, damage control, fire fighting, environmental protection, apprentice training, meteorology, catering and underwater medicine have been funded from Services budgets.

The United Nations Educational Scientific and Cultural Organisation (UNESCO) report on 'Challenges for the Year 2000' lists occupations in the maritime sector, such as managers for marine parks, environmental toxicology, underwater habitats, marine archaeology and tourism for which the initial manpower and skills will be drawn from the increasing number of highly trained and disciplined naval personnel being released each year. UNESCO, through the offices of the Inter-Governmental Oceanographic Commission (IGOC) coordinates training and education in marine sciences (TREDMAR) and the promotion of marine science (PROMAR) as well as the coastal and marine science program (COMAR). Other major UN institutions which assist in promoting the use of the seas and seabed include the Food and Agriculture Organisation (FAO) in Rome, International Maritime Organisation (IMO) in London, International Centre for Ocean Development (ICOD) at Halifax, UN Environment Program (UNEP) in Kenya, International Oceanographic Commission (IOC) in Paris, the International Hydrographic Office (IHO) in Monaco and World Meteorological Office (WMO) in Geneva.

Further, ocean universities have been established in Halifax, Malmo, Malta, Vancouver and Tokyo. Interestingly, however, no UN sponsored maritime institutes have been established in the Indian Ocean region. Recently, however, Australian Government funding has assisted the establishment of the Indian Ocean Research Network in Perth. And the Indian Ocean Rim Trading Bloc is perhaps the single most important development which will bring discernible economic growth to the region – and without having to solicit aid or preferences from nations external to the region. It is also the case that, in today's peacetime context, navies have a wider constabulary and humanitarian role for constructive engagement in disaster relief, poaching, piracy and nation building programs such as port and harbour modernisation. Above all, in countries with a continental mindset like India, Pakistan and Bangladesh it is only committed sailors and the 'mafia in white' (naval analysts) who can make any headway in the seablind corridors of power.

SUPERPOWER CONFRONTATION IN THE INDIAN OCEAN

Neglect of the Indian Ocean by India gained an extended lease of life during the Cold War confrontation, because the region contained not only the bulk of proven world oil reserves and strategic materials, but it also provided the forward bases and the underwater topography and oceanographic conditions suitable for operating nuclear submarines. Hence, industrialised country resources, which could have been used for developing India's extended coastal zones, as was the case in China, were instead diverted to construction of sophisticated naval bases in remote places like Diego Garcia, Yemen, Socotra, Reunion and Djibouti. Actions such as these stymied creative thinking for regional cooperation. India, therefore continued to be a rich country, but with poor people afflicted by sea blindness.

The end of superpower confrontation could be seen, in an oceanic paradigm, as the victory of the maritime alliance, spearheaded by the US, over the heartland led by the Soviet Union, thus preventing the USSR from reaching the warm waters of the Indian Ocean. Moreover, the emergent polycentric international order with its strong Asian core, the fast growing markets of India and China, the dismantling of apartheid and growing sub-national aspirations have made it necessary to redefine the rigid notions of sovereignty and security, as ocean boundaries are not necessarily as emotive as land frontiers. Consequently, the management of change, following the demise of the bipolar world, became the major international challenge with allies and adversaries exchanging places.

NON-MILITARY SECURITY CHALLENGES

National security flows from an appropriate blend of political resilience, economic structure, technological competence and human resources, backed by military power. So economic and demographic factors have come to be identified as essential sources of national power. Non-military security challenges have been identified as mass poverty, resource scarcity, organised violence and environmental degradation. As a further indication of this, there are a billion poor people in the world, of whom 60 per cent are in the mineral endowed and commodity rich Indian Ocean region. These impoverished sub-groups provide the breeding ground for legal and illegal migration and for a spectrum of social evils.

Secondly, pressure on resources, especially energy and water, will in time lead to a scramble among nations as witnessed in river disputes and power shortages already in the sub-continent. Thirdly, the problem of organised violence is spreading to several Asian and South American countries. Two of the larger drug growing areas – the Golden Crescent and Golden Triangle – are located on the Pakistan-Afghanistan border and the Burma-Thailand border respectively.

Guangdong and Pingyan in China and Kabul and Peshawar in Afghanistan and Pakistan, respectively, are the major illicit arms bazaars. Terrorism, drugs related violence and the emergence of a gun culture are pointers to the proliferation of organised crime.

Finally, the environmental degradation observed in the 'greenhouse effect' along with ozone depletion and pollution of coastal waters has threatened the sea from which life first emerged. But, as Rachel Carson has aptly stated, 'The sea, though changed in a sinister way, will continue to exist; the threat is rather to life itself'.

REGIONAL NAVIES IN UN PEACEKEEPING

With the notable exceptions of the Korean War and the 1991 Persian Gulf conflict, and they could be more correctly described as conflict resolution, navies have hitherto been marginalised in respect of UN peacekeeping activities. This has been so despite the inherent advantages of flexibility, mobility and controllability of warship operations in international waters. The total absence of senior naval officers in the UN military staff committee responsible for formulating the structure of UN naval operations is a pointer to the mindset which fails to consider that ships' command facilities present a readily available and firm base for initiating operations, and for withdrawing if conditions require it. This is all the more applicable in volatile areas in the Indian Ocean region, where local navies should contribute to both 'peacemaking' and 'peacekeeping' even if only to lessen the burden on the monolithic superpower.

Now, India is cooperating with several regional countries, through combined naval exercises, oil spill responses, measures ensuring safety of life at sea and safeguarding the environment. Even the hitherto limited navy to navy contacts have significantly reduced inbuilt prejudices and hegemonistic outlooks. Consequently, Eric Grove's remark that 'naval forces lend themselves extremely well to international action' merits emphasis and the more they can be put into 'a wider international security framework, notably the security machinery of the UN, the better'.

NATION-BUILDING ACTIVITIES

In the underdeveloped littoral nations of the Indian Ocean region, navies need to play a more constructive role in nation building. This could be the case, for example, in the Nicobar and Laccadive Islands of India, where there are few facilities for offloading livestock or the heavy equipment needed by the ex-servicemen being resettled there for security rather than economic reasons. The

Indian Navy can also contribute here by supplying landing craft, portable generators, communications facilities and medical clinics to help the settlements take root. The Indian Defence Forces have also made possible the survival of India's two Antarctic settlements.

As a further example of the potential of this kind of activity, the success of the small Indian peacekeeping contingent in Somalia should be noted. It was founded in their medical units and engineers establishing good contacts with the local population. Similarly, naval doctors, seagoing duties permitting, could be used in a planned program of cruises to bring succour to the enlarging Indian Ocean diaspora, noting that this part of the world has the dubious distinction of containing one third of the world's blind people along with millions of under-nourished children.

Clearly, then, the seas and sailors are a national and readily available medium for bringing people together in ways which will influence national economic, cultural, industrial and security perceptions. Moreover, regional maritime and commercial cooperation can lead to India and Australia shedding some of the colonial basis for military and other links. This can be achieved through large joint projects like deep seabed mining, analysis of ocean climates and mapping of the sea floor with advanced satellites, which, according to Mr Gregory Neuman of Johns Hopkins University 'will enable us to come a step closer to understanding the processes that drive our planet'.

Such major multi-disciplinary ventures will bring in their wake interlocking rings of oceanic togetherness, as the indivisibility of the seas makes it possible for 139 of the 185 member states of the UN to have common frontiers. Profitable economic interaction encouraged by ocean trading blocs as will be seen below, will further enlarge the brotherhood of the seas which has no ethnic, racial or religious overtones.

REGIONAL MARITIME COOPERATION – APEC

The current phenomenon of oceanic trading blocs has found new economic complementarities and ways to expand trade and investment. Nations have recognised the mutual advantage of discussing common problems, including double taxation, state sponsored terrorism, refugee flows and narcotics trafficking across several borders. The necessity for dialogue, the networking of summit and ministerial meetings, two track diplomacy and business associations all have encouraged regional cooperation. Tourism, business travel, education and informatics have all made significant strides. But, the Indian Ocean remains the only major region in the world without a viable economic grouping. Hence, the importance of the emerging Indian Ocean Rim Trading Bloc.

The activities of ocean trading blocs only increased with the establishment of the World Trade Organisation (WTO) and the ongoing liberalisation of the global economy. The six year old Asia Pacific Economic Cooperation forum is one such ocean trading bloc, which has undoubtedly reduced insecurity, but has also given rise to the feeling that the North American Free Trade Association (NAFTA) is reaping comparatively greater benefits. Further, Japan and Asian countries appear to be more comfortable with APEC acting as an unstructured and bureaucracy free process for confidence building.

ASEAN REGIONAL FORUM (ARF)

The ASEAN Regional Forum took hold in 1993 as a testimony to ASEAN's desire to enhance security, by fostering dialogue among participants, again without establishing an institutionalised structure. China would, however, not like to see the ARF become a conflict resolution mechanism, especially in view of her bilateral problems in the South China Sea. On the other hand, Australia, Canada and South Korea have their own agendas too.

INDIAN OCEAN TRADING BLOC

The genesis for creating a regional forum of Indian Ocean rim countries lies in the Afro-Asian Conference at Bandung in 1954. Sri Lanka and Tanzania later proposed the Indian Ocean Zone of Peace (IOZOP) concept which was aimed at keeping superpower confrontation from spilling into the Indian Ocean. Unfortunately, there was no consensus as to basic objectives, despite the non-aligned states adopting a declaration at Lusaka in 1970 calling on all states 'to exclude great power rivalries and competition from this region'. The Indian Ocean Commission (IOC) was formed in 1982 by the island nations of Mauritius, Madagascar, Seychelles, Comoros and Reunion, to encourage economic development through regional cooperation, but it failed to broaden the oceanic agenda. Similarly, the Gulf Cooperation Council (GCC) and the Southern Africa Development Community (SADC) remain circumscribed.

The Indian Ocean Marine Affairs Cooperation Council (IOMAC) began in 1985 to provide a framework for dealing with marine resources, science and environmental issues, but could not gather the required momentum. Similarly, the South Asian Association for Regional Cooperation (SAARC) became mired in Indo-Pakistani intransigence. Only during the recent summit meeting in Delhi was SAARC given more substance, by resurrecting the Preferential Trading Agreement (SAPTA) which is to come into effect before the end of 1995.

INDIAN OCEAN RIM TRADING BLOC-MAURITIUS CONFERENCE (M-7) – MARCH 1995

President Nelson Mandela provided the impetus for an Indian Ocean Rim Trading Bloc during his state visit to Delhi in January 1995. He declared that 'the natural urge of the facts of history and geography that Nehru spoke of, should broaden itself to include exploring the concept of an Indian Ocean Rim grouping for socio-economic cooperation and for improving the lot of the developing nations in multilateral institutions like the United Nations, British Commonwealth and the Non-Aligned Movement'.

An intergovernmental conference was held in Port Louis from 29-31 March 1995 and was attended by seven Indian Ocean Rim (IOR) countries: South Africa, Australia, India, Mauritius, Kenya, Singapore and Oman – the M-7. In the spirit of transparent regionalism the conference agreed to promote sustained and balanced growth of the peoples of the participating countries, with clear links to human resource and trading institutions. The need to formulate and implement economic cooperation programs, including the expansion of trade, tourism, direct investment, scientific and technological exchanges was spelt out along with the necessity to lower barriers to the free and enhanced flow of goods, services, investment and technology within the region. There was also agreement that close interaction of trade dialogue among members in international fora should be encouraged. Finally, there was unanimity over the building and expansion of mutual cooperation through a consensus-based evolutionary and non-intrusive approach.

The guiding principles adopted at the conference were that:

a. cooperation should be based on the respect for sovereign equality, territorial integrity, political independence, mutual benefit and peaceful coexistence;

b. such cooperation should not be a substitute for bilateral and multilateral cooperation, but should reinforce and complement such fora; and

c. bilateral and other issues likely to generate controversy and be an impediment to regional cooperative efforts shall be excluded from the deliberations.

There was a feeling that such a small group of countries, one from each of the sub-regions of the IOR would accelerate the norms of cooperation, say over a period of five years instead of a 'talk shop' of endless conferences which seldom translate into practical measures.

SECOND TRACK FORUM (IFOR) IN PERTH (P-23) JUNE 1995

Australia hosted a 'Second Track' conference to examine the potential for regional cooperation in Perth in June 1995. It was attended by 123 participants from 23 Indian Ocean littoral countries (P-23). The 'Economic Working Group' of this conference identified two broad agendas – the first on business facilitation, such as visas, taxes, currency convertibility, trade promotion and a regional business directory. The second encompassed technology transfers, transport, telecommunications and human resources development.

The 'Other Issues Working Group' took on issues such as education, health, law and justice, sport, the environment, drugs, terrorism, maritime cooperation, economic opportunities and comprehensive security approaches, including their applicability to maritime resource protection, defence cooperation, non-proliferation, security of small island states, safety at sea, state sponsored piracy, UN sponsored peacekeeping and preventative diplomacy. This agenda did spill over into security related matters which had deliberately been excluded from the Mauritius meeting, so as not to deflect the Indian Ocean Rim countries from effective regional economic cooperation.

Having considered developmental and ocean trading activities, this chapter will now turn to evaluate the security perceptions of the region, especially with respect to the Arabian Sea and the Bay of Bengal. In association with this, the chapter will analyse the force levels of China, Pakistan and India.

CHINA EMERGING FROM THE SEA

China and India are the world's two most populous nations and all projections about the future of the Asian region, and by extension the world, are dependent on the internal dynamics and external responses of these two big neighbours. China will remain India's perennial strategic interlocutor, with her military forces being the central issue for the furtherance of their political and economic objectives. Consequently, India and China will need to cooperate in the post-Cold War era; resolving their territorial disputes and clarifying their security perceptions.

Beijing should be more transparent about her defence expenditure which has been stated publicly to be 5.8 per cent of GDP. Moreover, PLA statements about preparing for local and border wars, while stressing the value of military power per se in the build up of comprehensive national power create ambiguity as to the aims of their military modernisation in which the navy has been given high priority.

By the next century China will have not only the economic power but also the largest defence budget, with the engines of modernisation including shipbuilding, marine technology, missile proliferation, shipping and a continuous movement of people to the booming coastal areas. Examples of the concentration on shipbuilding include the construction by the end of 1994 of 98 vessels in the Dalian, Guangzhou, Jiangzhou, Shanghai and other shipyards, and the employment of 2,000 Russians in Chinese shipyards. Activities like this are aimed at catapulting China's navy, from being a coastal defence force, to being a three dimensional blue water navy with a nuclear deterrent. Incidentally, Japan's navy, consisting of seven DDGs, 55 frigates, 15 submarines and 100 P3C Orion patrol aircraft armed with Harpoon missiles, will, perforce, be keeping pace with these developments.

China has been concerned about Islamic manifestations emerging in her vulnerable Xinjiang province, but has now revived the 'Silk Route' as a strategic opening to the Arabian Sea, through either Iran or Pakistan. Additionally, China is constructing an all weather road linking Yunnan province with Myanmar, which in turn is the bridge between South and Southeast Asia. The Far Eastern Economic Review has reported that China is assisting with the construction of naval facilities on Hianggyi Island, which in turn could lead to greater commercial penetration of the Indian Ocean. China is also reported to have built a radar surveillance station on the Great Coco Island.

China has laid claim to the entire South China Sea, with the unconvincing logic that there is historical evidence proving that these islands have always been Chinese territory. In 1970, China seized the Paracel Islands, north of the Spratlys, more because of the economics of oil than because of geostrategy. Furthermore, despite the 1991 Manila meeting of ASEAN nations, attended by China and calling for a negotiated settlement of South China Sea disputes, Beijing constructed facilities on Mischief Reef, which had been regarded as its territory by the Philippines. China's firing of missiles off Taiwan and close to drilling rigs is a further indication of her more assertive stance. Yet in October 1994, Beijing regarded the dropping of sonobuoys by aircraft from the USS KITTYHAWK, near a Chinese nuclear attack submarine (SSN) as an act of aggression.

The storm brewing in the South China Sea will create turbulence also in the Bay of Bengal, with world powers turning a blind eye to Beijing's human rights violations, abuse of intellectual property rights, nuclear testing and missile proliferation; all to take advantage of economic opportunities.

The PLA-N has been expanded to 35 missile carrying frigates, 18 guided missile destroyers, more than 217 missile armed patrol craft, and 51 amphibious ships, spread among three major naval commands. The PLA-N also has 50 submarines, including nuclear powered attack submarines and ballistic missile

firing submarines together with a Coastal Air Command of 875 shore based aircraft and 68 armed helicopters. With the legitimising of nuclear weapons in perpetuity brought about through the extension of the Nuclear Non-Proliferation Treaty (NPT) China now has an opportunity to exploit nuclear missiles as a currency of power.

Consequently, the strategic environment of the Indian Ocean will become more demanding for India's neglected maritime forces, especially in view of the increased sea-based activities related to growing potential for export trade, together with the ramifications of the Indian Ocean Rim Trading Bloc.

Although the Sino-Indian relationship is thawing, closer examination would suggest that the thaw is more on Chinese terms. The gains for India appear to be more symbolic than substantial, with China being the pace setter in the growing use of the oceans, both for development and for deterrence. India, therefore, needs to harness and harmonise her maritime capabilities to deal with China in a manner which is neither provocative nor deferential, but quietly and confidently as befits a big neighbour.

PAKISTAN'S INDIA-SPECIFIC MARITIME MENU

Pakistan, after the disastrous result of the 1971 conflict – has buttressed its demoralised navy, by increasing defence expenditure to a published 6.88 per cent of GDP. Realistically, the percentage could be doubled by taking into account the leasing of warships and Saudi Arabia's largesse. Pakistan has acquired three Gearing Class destroyers with Harpoon missiles, six Amazon or Leander Class frigates and eight Chinese built missile patrol craft with missiles of 98km range. Three Type 22 frigates are also expected to join the Pakistan Navy in the near future, heralding also the replacement of steam propulsion with gas turbines. Furthermore, a Dutch built replenishment ship has joined the fleet and six missile-armed Daphne and Agosta Class submarines are on order. Consider also that Iran now has Kilo Class submarines and the Arabian Sea will soon have a significant concentration of conventional submersibles.

Pakistan's maritime forces also include the three Exocet anti-shipping missile fitted Atlantic maritime patrol aircraft, probably to be augmented by three P3Cs, with a range of over 7,000km and able to carry Harpoon missiles. Operating together with Saudi Arabia's airborne early warning and control aircraft (AWACS) these aircraft will give the Pakistan Navy a three dimensional missile warfare component.

Moreover, Beijing has transferred the M-11, which is a short range ballistic missile (SRBM) which supposedly does not violate the missile technology control

regime (MTCR). Hatf 2 and 3 missiles, akin to the Scud but with an operational range of about 800km, have also been transferred. China and Pakistan have also co-developed an anti-aircraft missile (ANZA-II) and are working on an anti-tank missile (Green Arrow). They have also jointly produced the K-8 jet trainer.

The Chinese passion for explosives, observed from the days of bamboo fire crackers ushering in joyous celebrations in the Middle Kingdom, has more recently found expression in the spectrum of long and short range missiles. These have become persuasive elements in China's realpolitik in the Indian Ocean region – as also seen in the initial supply of Silkworm missiles to the Gulf countries. China is now providing difficult-to-detect forms of military cooperation to Pakistan, in the form of vital nuclear and missile components, propulsion systems and guidance and re-entry technologies.

Pakistan also gains from access to quasi-Chinese nuclear weaponry and from the Khushab fast reactor near Rawalpindi, as well as from the availability of the Lop Nor nuclear testing site in China; all of which are pointers to Beijing's perception that a nuclear armed Pakistan will be a crucial counterweight to India.

The collapse of the Soviet security structure has also altered the regional balance in Central and South Asia. Pakistan is trying to increase strategic depth through improved relations with the Central Asian states, a consequence of failure to reshape her own destiny, as Islam has not brought the desired peace to this region. Indeed, the majority of muslims opted to remain in India after the 1947 partition and there are presently more muslims in India than there are in Pakistan.

The Sunni-Shia fissure being played out in the Pakistan-Afghanistan imbroglio has resulted in the influx of a million refugees into Pakistan. Moreover, the spillover of more than $8.7 billion of the 'heroin-Kalashnikov culture' which, together with RDX explosives and land mines has taken 2.6 million civilian lives, has made deep incursions into Sindh, Punjab, Kashmir, Sri Lanka and Northeast India. Additionally, the high altitude conflict arena of Siachen glacier is costing each country over Rs. 1000 crores annually, according to US estimates. The widespread phenomenon of mujaheddin appearing in Turkey, Egypt, Somalia, Algeria and France testifies to this outflow of terrorism and confirms that proxy wars can be costly to national exchequers.

India needs a stable Pakistan to ensure her own development into the new century; with concentrated effort in improving literacy, health and housing of the weaker sections of society. Resolution of the international boundary with Pakistan is well within the reach of both countries, as it is focused on the existing 'Line of Actual Control' (LAC) in Jammu and Kashmir. This has been in place for over a quarter of a century and does not require population movements as is the case with similar issues in Palestine, Bosnia and Rwanda. Nevertheless, Pakistan's

strategy of confrontation and her selective naval buildup in the sea denial role, especially in the Arabian Sea, will need to be considered when assessing India's maritime perceptions and force levels.

INDIA'S NAVY IN THE INDIAN OCEAN

India, unlike China, attempts to harness military forces for the attainment of political objectives, but at the same time keeps her defence infrastructure separate from policy making parameters. This compartmentalisation tends to insulate the Indian Defence Forces from political deliberations, other than those related to the defence of territory and offshore structures. Hence, military options such as Agni and Prithvi missiles, nuclear submarines, nuclear options and peacekeeping are seldom used to gain diplomatic advantage.

This mindset is clear from Indian defence spending which only marginally increased in real terms from Rs. 6554 crores in 1986/86 to Rs. 6714 crores in 1994/95, which is 2.3 per cent of GDP. The navy's share of this is only one eighth of the total defence budget. Consequently, India can hardly use the ingredients of seapower either for economic growth or for constabulary duties beyond a radius of about 1500 nm. The Indian Navy is therefore a regional force, well below the strength of medium power Chinese or Japanese navies.

India's navy comprises two 20,000 ton sea control ships, of which at present only Indian Navy Ship (INS) VIRAAT is operational. The five guided missile destroyers are some 15 years old, eight out of 18 frigates are fitted with surface to surface (SSM) and surface to air missiles (SAM). Eleven of 15 corvettes have Styx and SSMs. There are also two vintage replenishment ships which are being replaced by new tankers. Given the normal refitting cycle there will be, on average, three DDGs, 12 frigates, 10 corvettes and one sea control ship, with a squadron each of Sea Harriers, Sea Kings and Kamov helicopters to be juggled between two fleets. Additionally, two more dry docks will be available by the turn of the century.

A further innovation has been the transfer of financial control of spares and refits from the Ministry of Defence to Naval Headquarters. Overall, there will be only 8-10 major warships in the eastern and western Fleets to monitor the Arabian Sea and Bay of Bengal, not to mention the vast Southern Indian Ocean. This situation reinforces the need for a modern sea control ship, operating high performance aircraft to deter Harpoon armed maritime patrol aircraft.

The 15 submarines, albeit without missiles, will be reduced to 12 in coming years. The nuclear powered CHAKRA has been returned to Vladivostok, adding urgency to the need to retrofit the remaining submarines with missiles. The 10

TU 142 and five IL 38 maritime patrol aircraft, the latter of which are being phased out, together with 10 Dornier and 13 Defender patrol aircraft with light weapons are expected to monitor the 2.2 million square miles of the EEZ with consequent pressures on aircraft and crews. Consequently, India, which is still largely dependent on external sources for her civil and military aircraft, ship borne aircraft, ship borne weapons systems and sensors, as well as main battle tanks and self propelled artillery, has a need to accelerate national self-reliance. This will be an attractive sector for Indo-Australian cooperation in technological design, development and production.

There are some naval related developments which have the potential to offset the problems outlined above. These include the Trishul SSM for the Navy, pilotless target aircraft like the Lakshya, the remotely piloted vehicle Nishant, surface-to-surface multi-barrel rocket launcher Pinaki, advanced composite sonar and weapon control (Panchendriya) airborne early warning and control aircraft; all of which have successfully completed trials. The three Delhi Class destroyers, three Bhramaputra Class frigates and the remaining Khukri Class corvettes, together with the marine acoustic research ship, are all nearing completion. Associated with this the Defence Research and Development Organisation (DRDO) spending is also expected to rise from 5 per cent to 10 per cent of the defence budget by the end of this decade. DRDO has already transferred technology to the extent of Rs. 5,000 crores for production orders.

Technology has, perforce, become an integral part of war; a force multiplier and an instrument of deterrence. It is integral to command at sea and therefore a major contributor to success during operations. Unfortunately for India, a large number of engineers and scientists from the institutes of technology are being weaned away from the mother country because of unsatisfactory working conditions there.

CONCLUSION

This chapter has explained the psyche underlying India's sea blindness, which has resulted in the late development of a national maritime strategy and non-use of naval forces – a situation which is equally applicable to other South Asian countries. It has also highlighted the unique role of navies in developing countries for nation building and for providing trained and experienced people for a spectrum of ocean based activities.

The need for an Indian Ocean Rim Trading Bloc, to ensure sustainable economic development, with South Africa, Australian and India being the corner stones, has been stridently echoed by none other than Senator Gareth Evans who,

in his book *Australia's Foreign Relations* stated that 'there is a maturing consensus that economic development is more important than building military strength as security is best guarded by working in cooperation and increasing cross links of interdependence rather than by building armouries'.

Even so, the need for peninsular India to have a cost-effective navy to discharge her enlarging responsibilities need not attract the red flag of hegemonism, but instead encourage Indo-Australian collaborative engagement in the Indian Ocean. A force level of two or three sea control ships, 18 frigates, 12 corvettes, and three tankers, augmented by force multipliers will enable India's navy to maintain the requisite operational levels in the Arabian Sea and the Bay of Bengal.

This is well within India's reach, both technically and financially, if the defence budget is pegged at four per cent of GDP, as recommended by the Finance Commission. This is a level of defence spending considerably less than that of India's neighbours. Moreover, the Expenditure Committee's recommendation for the reallocation of the defence budget on a ratio of 50:30:20 between Army, Air Force and Navy respectively, would help bridge the asymmetry evident in the present ratio of 58:30:12.

When the changing currency of maritime power is examined, there is growing evidence that economic development will have a bigger impact on sea power than perhaps sea power will have on the economy. But, if our guard is lowered on this planet of oceans, paradoxically called Earth, the maritime heart beat will be weakened in this period of oceanic preeminence. The rimland whale must triumph over the heartland elephant!

8 Sea Power and Australia's National Interest

A.W. GRAZEBROOK

AUSTRALIA'S NATIONAL INTEREST IN THE 21ST CENTURY

BEFORE considering the use of sea power in any nation's national interest, that national interest must first be defined. In Australia's case, the national interest will require primarily the defence of Australian territory, its EEZ and the rights of its people to pursue their economic and social activities in their homeland.

That defence will involve the ability to cope with a substantial difference in levels of activity, from maintaining a presence throughout Australia, through dealing with fishery and other economic infringements, to rescuing Australian citizens from areas of acute civil disorder, up to outright total non-nuclear war. It is also likely to be achieved best by developing further and maintaining the ability to operate extensively with the maritime forces of friendly powers in our immediate region.

At this stage, the term 'region' as used in determining Australia's defence policy, is imprudently rigid with respect to geographic boundaries. We should recognise New Zealand and the powers to our near north (ASEAN) as the immediate region, and a much larger area (westwards to Cape Comorin, northwards to the Strait of Tsushima and eastward to at least 179 degrees east) as a related region in which strategic developments will have a major and profound influence on our immediate region.

More broadly, the support of the national interests is likely to require regular international port visits in support of Australian trade and diplomatic activities, both in our immediate region and in the 'outer region' and the ability to provide assistance in natural disasters, both at home and overseas.

When considering the national interest in the early part of the 21st century, we are looking a long way ahead in terms of diplomatic relations and international affairs. However, 10 to 15 years is not far ahead in terms of force structure. The Berlin Wall came down in 1989. Since then, the strategic scene has changed rapidly and fundamentally. Also in 1989, the contract for the ANZAC frigates was signed. The first ship had not been delivered at the time of writing – late 1995.

Therefore, the primary governing factor in setting force structures must be a wide range in levels of capability. The RAN's force structure needs to provide Australian Governments of the future with a wide range of defence options.

ROLES FOR AUSTRALIAN MARITIME FORCES

An important factor in considering roles for Australia's maritime forces is the suitability of navies for graduated response; a major advantage of naval power over air or land power. Navies' roles can include a simple notional military presence in a region for a short or a prolonged period. The mere fact that a naval ship, flying the national colours, is in an area signifies a national presence and thus is a deterrent to potentially hostile or illegal action.

Moving up the graduated scale, naval vessels can use their combat systems in self defence, in defence of Australian citizens, vessels or other assets, or at the top of the scale, take tactically offensive action to destroy intruding forces. Thus, at the low end of the scale, the RAN must be able to play its role in patrolling the EEZ in peacetime.

The RAN must also be able to undertake major independent operations in a major regional conflict. This includes implementing a strategic deterrent, operating within range of high capability hostile shore-based aircraft and under threat of modern diesel-electric and nuclear powered submarines. Furthermore, the RAN must be able to ensure the safety from mine, submarine or surface attack of Australia's coastal sea borne trade and overseas trade with nearby friendly powers.

Additionally, the RAN should be able to move Australian military forces throughout our EEZ and support those forces once they are ashore. Looking further afield, the RAN should be capable of undertaking major operations jointly with friendly regional powers and with United States forces in the region. This need should influence equipment choices.

Finally, the RAN must be able to participate in some international peacekeeping operations. However, this need should not influence force structure decisions. If Australia has forces of a type suitable for a given peacekeeping operation and those forces can be spared, then they may be made available. If we do not have suitable forces available for that operation, the United Nations must look elsewhere.

There is also a need to elaborate on the term 'naval presence'. In most peacetime circumstances, a naval presence can be provided by a relatively simple, low cost vessel large enough to remain at sea in difficult conditions. Further, a 'naval presence' during peacetime has the important role of keeping the RAN in

the international public eye. Reports of patrol boats, escorting suspected illegal fishing craft into port to face trial, highlights to the Australian people the fact that the Navy they pay for is doing something essential.

For this reason, the RAN should press hard to expand amongst its roles the patrol duties currently undertaken by the Fremantle Class patrol boats and the work of the hydrographic service. Clearly then, to ensure the ability to maintain a naval presence over the very large area that is Australia's EEZ, requires a substantial number of hulls. Equally important, to fill these roles, diverse in nature, level and geographic location as they are, the RAN needs a balanced as well as numerous force.

To sum this up: by 2005 the RAN must have a force structure suitable for operations over a wide area, ranging from the broad Indian and Pacific Oceans to the narrower waters around our northern coast line. Inshore or in the oceans, most of these operations will be conducted over huge distances, far from major dedicated shore support. Reflecting the fact that about half of the Australian continent lies north of the Tropic of Capricorn, the RAN must have a force structure which enables it to operate in climates ranging from temperate to tropical. This force structure must also be able to operate under high levels of missile, mine and submarine threat and at the same time have sufficient hulls in the water to provide a naval presence throughout our vast area. This last point highlights the need to be able to support front line forces in the forward areas of our EEZ.

This leads to the question of what maritime forces the Australian Defence Force will have early in the next century and whether these will be qualitatively and quantitatively sufficient to fill the roles outlined above.

At this stage, mention should be made of the progress being made in working with New Zealand's maritime forces. Of course, they are not part of the ADF's force structure, but the ADF and New Zealand Defence Force (NZDF) have worked very closely together for many years and their major units (frigates and P3Ks) are an effective and useful force. Joint operations will be enhanced when both navies operate ANZAC frigates and hopefully, the same type of intermediate helicopter.

THE ADF'S MARITIME FORCE STRUCTURE FROM 2005

Under current and approved plans, by 2005, the RAN will have:

- 6 Collins Class submarines;
- 6 Adelaide Class general purpose frigates, capable of up to medium range AAW, each equipped with two large helicopters;

- 8 ANZAC Class frigates with patrol and self-defence armaments only;
- 15 Fremantle Class patrol boats, being replaced by 9 offshore patrol combatants;
- 6 coastal minehunters;
- 2 inshore minehunters and some minesweepers;
- 2 underway replenishment ships;
- 2 large training and helicopter support ships; and
- hydrographic and other service vessels.

The RAN's major air assets will include:

- 16 Seahawk S70-B2 helicopters for the Adelaide Class FFGs
- 30 (up to) intermediate anti-surface and surveillance helicopters for the ANZAC Class frigates and offshore patrol combatants
- 6 Sea King utility helicopters.

The RAAF's dedicated maritime air assets will be 18 updated P3C Orion aircraft with long range surveillance, anti-submarine and anti-surface capabilities. Other RAAF assets whose roles include maritime operations will include:

- 70 upgraded F/A-18s
- 36 F111Cs, RF111Cs and F111Gs
- 4 AEW and C aircraft.

Australian Army Blackhawk and other helicopters will be capable of operations from the training and helicopter support ships.

FUTURE UNCERTAINTIES AND INFLUENCES

At this stage, the major uncertainties are the extent of the proposed ANZAC frigate war-fighting improvement program (WIP) the number of offshore patrol combatants and whether the seventh and eighth COLLINS Class submarines will be ordered. A further and vitally important undetermined factor is the number and capabilities of the new destroyers proposed under project Sea 1400.

We need to recognise several further influences on the ADF force structure. The first is the difficulty in recruiting and retaining enough suitably qualified personnel for the ADF. The second is the budgetary limitations under which the ADF has laboured for some years.

Having said all this, as at present approved, but with two major and some other lesser exceptions, in 2005 the ADF will have a substantial and effective balanced maritime force. The question is whether that balanced maritime force will be

quantitatively and qualitatively sufficient to meet the ADF's roles in the first two decades of the century. Certainly, at last, 25 years after the first efforts, we will have an effective, well balanced MCM force.

The major exceptions to the balanced force will be AAW and the number of hulls in the water. The other exceptions include flexible forward area support, the lack of a modern mining capability, the level of ASW capability and the breadth of capability of the submarines.

Elaborating on the problem with mines, there is a wide range of technologies, the effectiveness of which was demonstrated in defensive roles in 1991 in the Persian Gulf. The ADF and so the RAN, are limited to modified bombs which can only be laid from aircraft – a far from cost-effective option in the defensive role. The new COLLINS Class submarines are capable of mine laying operations, but we have no mines for them and, like aircraft, they are an expensive means of defensive mine laying. We need mines. We need them for defensive operations and we need the ability to lay them cost - effectively.

The RAN's lighter forces in the forward areas depend on shore bases, at Cairns and Darwin. Even these are long distances from some key economic ports which are vulnerable to even unsophisticated mine threats. We deploy the AMASS system over land. This could be accomplished much more flexibly by sea, particularly by such ships as HMAS TOBRUK. Yet we are putting this relatively new ship up for sale, instead of, at worst, into reserve.

Before we do sell it, we should examine how flexibly some regional navies, including those of Indonesia, Malaysia and Singapore, use ships of the roomy and seaworthy LST type. They are not limited to amphibious operations, but operate very effectively in a wide range of support roles, including defensive mine laying. Looking further ahead in this area, some of the reported work on Project Sea 1654 is encouraging. We need a class of support vessel that is much more flexible than the current concept of one stop underway replenishment for oceangoing task groups .

Turning to anti-submarine warfare; although the ADF has some very useful assets, Defence has for some years allocated a relatively low priority to ASW. More time needs to be allocated to training by both the RAN and the RAAF. Further, by the early 21st century the lack of priority will show up in the RAN's force structure; through the low priority in the FFG progressive upgrade (PUP) the lack of an ASW capability in the new intermediate naval helicopters (NIH) the total lack of an ASW capability in the offshore patrol combatants (OPC) and the lack of dipping sonars in the Seahawks.

Unless this situation is reversed, the RAN will be going downhill on ASW just as the number and capabilities of submarines in the broad region are growing. Rebuilding a badly diminished base capability can be very expensive, and leave

us embarrassingly vulnerable, as the RAN has learned over mine warfare.

To express concern about the capabilities of the new COLLINS Class submarines is not to ignore their very strong points. These include much improved operational availability, excellent sonar systems and communications abilities – all vital attributes for their primary role of reconnaissance. However, the COLLINS weapons outfits do not fully exploit their platform potential. Thus, their Mark 48 torpedoes and sub-Harpoon missiles have all been in service for a decade or more in the OBERON Class.

The COLLINS Class needs at least a modern heavyweight torpedo. Armed with Tomahawk type missiles it would be a far more cost-effective strategic strike and covert deterrent capability than aircraft. Adding the seventh and eighth submarines, with air independent propulsion (AIP) with the consequent quantitative improvement in covert reconnaissance and deterrence, could be a very sound investment. The arguments against this are budgetary priorities in favour of a balanced force and doubt about whether we could raise the personnel to man the additional submarines.

Force structure factors applicable to several classes of naval vessel include command and control and stealth. It is difficult for the outside observer to assess our capability in command and control: you can see a radar, missile launcher, gun or helicopter but you cannot see command and control. However, it is a field subject to extremely rapid technological development in which investment offers a rich return, in terms of improved performance utilising existing weapons and sensors.

Real improvements in stealth need to be designed into ships from the outset. A glance at the Taiwanese LA FAYETTE Class demonstrates what can be done. The ANZACs have already been designed, so the next opportunities are the offshore patrol combatants and project Sea 1400 – the next generation of destroyers or frigates.

This leads to the number of hulls. Current plans are that only nine OPCs will be built to succeed 15 FREMANTLE Class patrol boats. The number of patrol hulls available, particularly in areas easily visible to the general population, will fall by forty per cent.

The arguments in favour of having the offshore patrol combatants capable of AAW self - defence and a reasonably high level of tactically offensive action have been publicly articulated. So also has the argument for an embarked helicopter, with respect to the increased level of surveillance coverage. Nevertheless, in this category the number of hulls in the water matters more. There are other factors supporting this proposition, not necessarily force structure related, but important nevertheless.

Raising the capability level means having to rely on more highly qualified

people, base-ported away from the two main fleet bases, with the attendant disadvantages. More, smaller, hulls give relatively junior officers and sailors earlier opportunities for challenging leadership roles and thus for development of the leaders needed by the Navy in the longer term.

To summarise this issue, nine OPCs is just not enough. Although these very capable ships would represent a very sound investment for regional countries, with geographically smaller but potentially more threat prone areas to police, nine ships only will distort the balanced force which the RAN needs. If the likely budget will not support at least 12 OPCs, the RAN should re-examine the opiton of reducing capability in favour of more hulls.

Finally, on this subject, it is worth noting that the OPC concept has already driven the RAN to select an intermediate size helicopter for the ANZAC frigates which are capable of taking Seahawks. Thus, we are electing not to use the helicopter operating potential of these ships to its fullest.

On the subject of AAW, providing that both the FFG progressive upgrade and a satisfactory ANZAC Frigate WIP are implemented, the RAN should have an acceptable level of layered AAW, particularly bearing in mind that, for geograpical reasons, the threat posed by new generations of missiles launched from submarines, surface ships and their helicopters and maritime patrol aircraft is more significant than that from short-ranged high performance aircraft operating from shore bases.

Finally, there is a need to mention the current lack of afloat medical facilities. Although this arose in the context of the 1991 Persian Gulf operations, it has an obvious application in the natural or civil disaster roles planned for the training and helicopter support ships. There are plans to include, in at least one of these ships, a two patient preoperative unit, a two patient operating theatre, support facilities, eight high dependency and 32 low dependency bunks. These facilities are a very significant improvement, but they are well below hospital ship scale.

CONCLUSION

Detractors of the arguments in this chapter will undoubtedly argue that it ignores budgetary reality. It has highlighted several deficiencies in the maritime force structure, as well as opportunities for exploiting existing and approved platforms more effectively. Admittedly, some of these would demand substantial sums of money. The nature of ADF service in our democracy schools uniformed personnel to accept budgetary dictates and to allocate priorities within them. Within that limitation, with the exception of the OPC decision, it may well be that the priorities have been assessed correctly.

Nevertheless, the writer, who is not a uniformed person, believes it important that there be an external assessment of what equipment Defence needs and when, as well as support for an increased defence budget, if that is what is needed. This writer believes that the time is coming when Australia will need to increase its defence budget. The defence community must gird its loins for that fight.

9 The Future of Australian Sea Power in the New Century

GARY PUNCH

AFTER the end of the Second World War, Sir Herbert Richmond wrote that 'Command of the sea is the indispensable basis of security'. In Asia- Pacific, essentially a maritime theatre of operations, this sentiment has particular resonance. This chapter of the book will outline Australia's maritime interests and examine how Government uses the Navy to promote these interests. It will also note some of the challenges to be faced in capital equipment investment and personnel management, which will shape the future for Australian seapower.

Through the centuries, the oceans have exerted a powerful influence over man. Nowhere is this more applicable than in Asia-Pacific. The countries of this part of the world have a special relationship with the sea. More than 70 per cent of the region's people live in coastal areas. Most Asia-Pacific states are maritime in nature, with extensive coastlines. They rely on the sea for transportation and in some cases, for their very existence.

For example, the South Pacific is a vast area of micro states, each of which is surrounded by a huge maritime Exclusive Economic Zone (EEZ) of vital importance to the well being of its people. Likewise, Southeast Asia is straddled by two of the world's major archipelagoes and more than 90 per cent of Southeast Asia's resources are to be found within their 200 nautical mile Exclusive Economic Zones. The sea sustains many of these nations; it shapes their consciousness. Much of the time it protects then; but, equally, it renders them vulnerable.

Consequently, countries in the region will have important maritime interests and Australia is no exception. At over 36,000 kilometres, Australia has one of the longest coastlines on the globe, the second largest continental shelf and the fourth largest Exclusive Economic Zone in the world. Furthermore, Australia has important offshore interests in the Indian, Southern and Pacific Oceans. In fact Australia's area of strategic interest stretches from the Cocos Islands in the Indian Ocean, some 7,000 kms, into the South Pacific, and from the island chains to our north into the great Southern Ocean.

In the more complex strategic environment of today, security interests cannot easily be separated from other national interests. Given the breadth of Australia's

strategic concerns, its maritime interests are diverse and interrelated. In fact, they fall into three broad groupings.

AUSTRALIA'S MARITIME INTERESTS

Firstly, Australia must protect its substantial marine resources. The fishing industry is the fifth largest of Australia's rural industries. There is, therefore, a need to police illegal access to the fisheries and to manage their exploitation. There is a need to protect the seabed oil and gas reserves and the offshore platforms that provide access to them. Coincidentally, there is a responsibility to preserve our natural marine heritage – especially in the Great Barrier Reef.

Secondly, security of shipping is vital to our economic well-being. Australia's trade volumes are the third largest in the world, after the USA and Saudi Arabia. Importantly, and for many people perhaps surprisingly, over 60 per cent of Australia's interstate trade also occurs by sea. Clearly, there is an important national interest in ensuring the stability of our trade, and in encouraging an international regime that protects shipping carrying our trade.

Thirdly, and most important from the defence perspective, is the need to secure sovereignty over offshore territories, and make the best use of the maritime buffer surrounding our country. For Australia, as for many of our neighbours, control of our maritime approaches is an essential part of our defence strategy. In a general sense, these are the national interests that define Australia's approach to the maritime environment in general, and seapower in particular.

THE NAVY'S ROLE IN PROTECTING AUSTRALIA'S MARITIME INTERESTS

So, how does the Royal Australian Navy (RAN) promote these interests? Because it is an island continent, with island territories, Australian seapower is an important strategic tool for Government. The substance of our seapower is in our naval capabilities and how they are employed. Our naval force structure is determined directly by our maritime interests and the defence tasks that flow from them. Consequently, a primary objective in defending Australia would be to prevent hostile forces from reaching our territory, or from launching successful attacks against Australia's interests in our maritime approaches.

The Australian Defence Force (ADF) maintains capabilities for patrolling our maritime approaches, for responding quickly and decisively to any emerging threat, and for protecting shipping, territories and resources in these approaches. Capabilities for such maritime operations are based on a mix of aircraft, ships and

submarines, including those resulting from recent substantial investment in surface ships and submarines.

Our naval platforms help us to gain strategic depth. They play an important role in surveillance, tracking and targeting within our maritime approaches. They can also contribute to strategic strike and the denial of the sea and air approaches to Australia. Investment will continue in maritime forces, with projects under way to acquire mine warfare vessels, surface combatants and enhanced naval aviation capabilities.

With the increasing availability of precision weapons, long-range sensors, and 'clever' countermeasures, the demands which could be placed on our patrol vessels are increasing. To ensure that our ships remain effective in the face of developments in technology, new platforms such as the ANZAC frigates will be fitted from the outset with state of the art sensors and weapons, including helicopters. Our surface combatant fleet, with land-based air support and ship-borne helicopters, has the reach and endurance to patrol Australia's extensive maritime areas of interest and to respond to threats. Australia's six guided missile frigates (FFG) will be upgraded to extend their operational life and to ensure their survival in the increasingly complex and ever changing maritime warfare environment.

Over the next decade, the introduction into service of eight ANZAC frigates will significantly enhance the surface combatant fleet; improving, for example, our capacity for maritime patrol and response and for protection of shipping. All of these ships will be in service by the early part of the next decade. Further in the future, planners have begun to identify the required surface combatant force capabilities after the three guided-missile destroyers (DDG) pay off in the next few years. A new class of patrol vessel will be acquired to replace the Fremantle Class Patrol Boats. The new vessels will have more capable combat systems, weapon and sensor suites, allowing improved integration with other maritime assets and hence a capacity for surface warfare in coastal and inshore waters.

A contract has been let for an Australian design, which is also being considered by Malaysia in its plans to acquire a large number of offshore patrol vessels. Selection of that design by Malaysia could provide an important opportunity for a collaborative acquisition project and support program for Australia and Malaysia.

All future major surface combatants will be equipped with helicopters, to extend the effectiveness and range of the ships' combat systems. Helicopters are, of course, being acquired for the ANZAC frigates and other surface combatants. These helicopters will be equipped to undertake surface surveillance and reconnaissance tasks, including over-the-horizon targeting.

Importantly, the force of six Collins Class submarines being introduced now,

will provide a very substantial capacity for maritime patrol and response, maritime strike and support of other roles. This submarine force will be an important element of our capacity to deny our maritime approaches to hostile shipping and to mount long range strike operations. The Collins Class submarines will be very difficult to detect and consequently less vulnerable than surface ships and aircraft. Their sensors and weapons will allow them to detect and attack shipping accurately at extended ranges.

Six Collins Class submarines are considered enough to meet current and foreseeable needs. Nevertheless, Government recognises that strategic circumstances may change and will review the priority for acquiring additional submarines after the commencement of the first five year Defence budget in 1996-97. Early in the new decade, planning will commence on upgrading the Collins Class to ensure that they remain effective in the face of developing technology. The need for more capable submarine-launched missiles will also be kept under review.

Six Huon Class mine-hunters are now being built to add to the planned ADF mine warfare force. The force will be able to detect and neutralise mines in port approaches, confined shipping routes and focal areas. It will also include a mine warfare systems centre at HMAS Waterhen in Sydney, providing operational and logistics support to operational elements of the mine warfare force.

Protection of merchant ships can be achieved with surface combatants assisted by land based aircraft, range and endurance permitting. Protection of offshore territories and resources could involve a combination of maritime patrol aircraft and surface combatants, with air defence being provided by F/A-18 aircraft and ground and sea-based missiles. Land forces would also be deployed as circumstances dictated.

The two recently acquired heavy landing ships, replacing the training ship HMAS Jervis Bay and the heavy landing ship HMAS Tobruk, will be modified for training, afloat medical support and helicopter operations. These ships will be able to transport land force groups of up to battalion size, with tanks, other vehicles and equipment. Together, all of these capabilities give form and substance to Australian seapower. But seapower means more than naval capabilities alone. The effectiveness of seapower depends equally on how it is employed.

The Australian Government takes a comprehensive approach to national security. While the Navy is structured to defend Australia, it can also fulfil a myriad of roles. As resources permit, and like most other modern navies, it is involved in policing, in diplomatic tasks and in peacekeeping roles. As the most mobile of Australia's Services, the RAN is well placed to enact our policy of regional engagement. It exercises with most other Asia-Pacific navies and it encourages regional navies to develop capabilities for national defence. In effect,

it builds relationships which, in turn, contribute to regional stability and security. The combination of these capabilities and approaches gives Australian seapower utility, strength and reach. It provides the Navy with the tools to promote Australia's national interests.

THE RAN AND THE FUTURE

Because planning the development of seapower means more than just developing the Navy, a range of strategic factors will come into play. Changes in the strategic environment, and evolving concepts of security, may require Government to take a fresh look at naval roles in the new century. Planners will need to take account of how the many unresolved maritime boundaries and competing resource claims in Asia-Pacific are finally settled. Any emergence of serious threats to the security of shipping in Asia-Pacific could encourage reassessments of the *tasks* of Australian seapower.

The operation of the Law of the Sea, especially relating to passage through the archipelagoes of Southeast Asia, will pose challenges for regional countries. There may well be consequences in it for the *employment* of seapower. Simultaneously, the Navy will play an important part in encouraging some of the maritime confidence and trust building measures being canvassed in regional security discussions. Continuing activity in this vein may well add to the *roles* of Australian seapower.

Of course, as Australia's maritime interests evolve, our force planning will need to keep pace. Clearly, choosing ADF capabilities is not a simple process. Selecting a particular system today involves making a judgment about what capabilities we will need in fifteen years, twenty years and more into the future. Taking the ANZAC frigate as a case in point, the requirement for the ship was developed in the early and mid-1980s, but the vessels are entering service a decade later. Looking ahead, the ANZAC frigates will still be a key element of the Navy in 2020, and probably even for longer.

There are some tough choices ahead. Not the least of these relates to the likely shape of Australia's surface fleet in the new century. We will need to think more laterally – to work at replacing capabilities, not just systems. We will need to look at different ways of undertaking critical tasks. The Government remains committed to maintaining necessary levels of funding for future force development, but this will occur within a tightly constrained budget. Effectively managing the changing nature of seapower will therefore be one of our most significant challenges.

Another great and related challenge lies not in strategic policy, nor in developing our force structure. Quite simply, it is managing our people. During the past

decade, there have been significant initiatives for Defence personnel and their families. These initiatives include the $750 million program to improve the standard of Defence housing, the investment of over $4 million on child care, and the establishment of the Defence Force Remuneration Tribunal (DFRT) to consider pay and allowances, taking account of the special nature of Defence Force service.

Nevertheless, it is still the case that no ship can put to sea without a competent and effective crew, which is why this Government is so committed to supporting its Defence personnel. It is no overstatement to suggest that Australian seapower will be underpinned as much by the quality of Navy personnel as by the shape of the fleet. With the introduction of new platforms such as minehunters, ANZAC frigates and Collins Class submarines, Navy personnel numbers will have to be increased. For this to come about retention rates will need to improve. Personnel are the greatest asset of any defence force and so, as differences in military technologies in our region narrow, our relative effectiveness will depend more and more on the human factor. A significant challenge for the Navy of the future will be to recruit and retain the people we need to give Australia that edge.

Recognising this, in August 1994 I announced a review of ADF personnel policy strategy headed by the former Secretary of the Department of Industrial Relations, Mr Graham Glenn. He and his team have conducted a comprehensive strategic review of the personnel policy challenges of the future. The Minister for Defence, Senator Ray, and I understand the challenges inherent in this. From our experience we believe we have the overall military strategy right, we have the equipment mix right but I am not sure that our personnel policy is right at this point. And this may be reflected primarily in our retention numbers and also I suspect in our recruiting numbers. The answer to both lies in managing conditions of service so that they reflect general community expectations.

I have no illusions about the difficulty of doing this, given the ADF's unique operating requirements. Nevertheless it is a task which must be carried out. To this end, the Glenn Review provides the framework for a strategic overhaul of personnel policy. The review has looked broadly at a range of personnel policies and procedures to ensure that the ADF can meet the challenges of the years ahead. The Glenn Review will allow us to put in place a personnel policy framework that reflects the very substantial changes that have occurred in recent years. It will help us to establish a personnel strategy which will be relevant to the circumstances of the next decade.

But more than this, I believe the review will signal to others in Government the unique nature of employment in the ADF. In the context of the Navy, the ship to shore ratio recognises the needs of personnel for relief from sea service. The ratio is skewed so that a member spends more time at sea in the junior ranks, and

less time at sea in the senior ranks. This skewing meets the requirement for training at junior levels, while recognising the need for more senior personnel to have a more normal family life. In addition, all our new classes of ships pay more attention to the comfort of personnel. Any comparison of the new ANZAC frigates or the Collins submarines with ships now paying off will reflect strongly the quantum leap in standards over the past 20 years.

Attracting the right people to crew these ships is a significant challenge. Competition from the private sector and other public sector organisations is strong for the very best employees. This is one reason why the issue of comparable pay rates and more flexibility in the pay structure, to enable competition with the private sector, is crucial. Fostering stronger links between the Regular members and Reserves is also essential for the formation of an effective continuum of Defence personnel.

Approaches to career planning are changing in Australia. Present trends are towards the pursuit of a series of careers over an individual's working life. This may mean that high separation rates will continue. Planning and management of the ADF must adapt to meet these new realities. Graham Glenn has addressed all these issues; many of which can only be responded to in the medium term, probably over the next three to five years. But a package of proposals which can be implemented much sooner is being examined. These could include initiatives in child care, spouse employment and assistance for ADF members to buy their own homes.

Furthermore, the ADF will need to draw its members from a more diverse range of backgrounds than it does at present. This will result in the ADF of the future being more representative of the multicultural society it is sworn to protect; including more Aboriginal and Torres Strait Islander members, more people from non-English speaking backgrounds, and a higher proportion of women. Of course, there will always be a need to balance community expectations with military requirements.

As we approach the new century, the nature and employment of Australian seapower will evolve. In this process, the means by which it is exercised may change. On that note it would be appropriate to complete the quotation from Sir Herbert Richmond which I offered at the outset.

> Command of the sea is the indispensable basis of security, and whether the instrument that exercises that command swims, floats or flies is a mere matter of detail.

While capabilities will change, one factor will remain constant. The people who provide the core of Australian seapower must be valued and well looked after. The future of Australian seapower is largely in their hands.

Part Two
Maritime Operations Beyond 2000

10 Technological and Operational Developments in Surface and Air Warfare

NORMAN FRIEDMAN

WITH the end of the Cold War, funding for navies, as for other military forces, is inevitably in decline. At the same time, demands for naval presence are growing and show no sign of decline. Additionally, many wonder whether, whatever their utility, fleets of surface ships are so vulnerable to modern threats, particularly missiles and mines, that their days are numbered. The menu of new technology is varied, but clearly not all of it is worth pursuing. Clearly, too, the days of military dominance over new technology are largely gone. For the near term at least, the question will be how much civilian technology navies can exploit, so that they can expend their very limited resources on that technology which the civilian sector cannot be expected to provide.

COMPUTERS

The most obvious example of new civilian technology is computer power. The first-line naval computers of the past two decades, many still in service, are now clearly obsolete by commercial standards; indeed domestic desk top machines commonly far outperform them. However, the civilian machines cannot meet naval standards in matters such as shock-hardening or of survivability against corrosion caused by salt water vapour or by stack gases. Standard workstations ashore are not designed to tolerate the stray currents common on board warships. Furthermore, commercial standard chips often change from year to year in undocumented ways, and these changes can have devastating effects on software.

Apparently, the most pressing technological challenge of the next decade could be to overcome these obstacles to using standard commercial computers, or at least standard commercial chips, in fully militarised systems like ships. If the challenge can be overcome, then navies can concentrate on software, which really is specialised and which probably cannot be derived from some civilian prototypes. The desire not to discard tested software is often the main reason why navies still use so much manifestly obsolete computer hardware in vital tactical roles.

One solution to the problem is to emulate older machines on new ones, with the attendant lavish sacrifice of computer power. Another solution, which might have very valuable civilian applications, would be some automatic or semi-automatic means of recovering the logical structure of existing software and then using it to create new software adapted to the newer machines. The ideal, of course, is to create fully portable software (ADA for example) but that does not address the problem of modernising existing ships.

COMPUTERS IN DESIGN

Another interesting technology is the elaboration of computer aided design (CAD) into computer aided manufacturing (CAM). Ultimately, as a consequence, major equipment, including spares, could be made to order rather than stored in quantity. Ships are already built in modular form. CAD/CAM ultimately promises the relatively easy transformation of shipyard or even other industrial capacity from one role to another, or relatively easy construction of modules to repair a damaged ship very quickly.

In the present period of very limited warship procurement, many governments face a very uncomfortable choice between maintaining specialised yards at uneconomic construction rates, or buying weapons and other essential equipment. It can be tempting to buy hulls but equip them with obsolete equipment. That could be suicidal if, as seems likely, the future will involve a very high rate of combat. In theory, if the promise of CAD/CAM is met, then the relevant capacity may be more one of design than of specialist construction skill. But, that then means that the specification in CAD/CAM must include numerous production practices which are never shown on blueprints. To a considerable extent, the success of the Australian Submarine Corporation in the Collins program encourages such a view.

Computers and CAD/CAM can transform the economics of warship construction. Previously, ships were literally bought by the ton, because much of the cost of construction was the cost of assembling the hull, ton by ton. More recently, a very large percentage of the cost of any warship has been combat system cost. One consequence has been that shipyards have received a smaller percentage of the money spent on ship acquisition and so have suffered badly. Another consequence has been that cost has become more reasonably measured by combat system capability, since capability had to be assembled, in effect, unit by unit.

Now, a large part of combat system capability lies in computers and in their software. Computers themselves are relatively inexpensive, especially if they can be bought as standard commercial equipment. The economics changes with

software, which is like a book. The first example is horribly expensive. Reproduction, however, carries virtually no cost. A hundred examples cost little more than one. If, indeed, the computer core of a ship's combat system is the most expensive single element of the ship and hulls can be mass produced in modular fashion, then it actually pays to build ships in larger numbers.

Much of course depends on how cleverly the software is written. If it cannot easily be modified, then new software must often be concocted to take account of changes in shipboard systems, and potential economies are lost. If, however, software can be truly modular, truly adaptable to change, then the basic software can have a long lifetime, and ship costs can be driven down, perhaps dramatically. That alone may not solve navies' numbers problems, since the cost of a fleet is more than acquisition cost; but it should help enormously.

Crewing is clearly a major problem, in which the computer's potential contribution has probably not been realised. For example, some years ago Admiral Joe Metcalf, who was then in charge of US surface warship programs, asked why warship bridges had to be larger (or more heavily crewed) than the cockpits of large airliners. Another place for major potential savings is Combat Information Centres (CIC). At present, many CICs are manned on the scale common two decades ago, before the advent of automatic target detection and tracking. If these devices work effectively, then there is little point in retaining a separate detector/tracker for each radar. The British have gone further with an experimental system known as distributed functional tactical data base which automatically melds data from different ship sensors with external (Link 11) data and thereby drastically reduces the CIC crew.

TECHNOLOGY AND WARSHIP EMPLOYMENT

Which technologies prosper over the next few decades must depend on what navies do. In the past, theoretical expectations often have not been met, because navies very reasonably waited for them to be confirmed by actual experience. Thus, for example, the Soviets deployed anti-ship missiles in about 1960, a fact widely known at the time. These weapons excited remarkably little interest until three of them sank the Israeli destroyer EILAT in 1967.

In this sense, the Cold War limited development because the deterrent posture of the two superpowers drastically limited combat and hence the lessons to be learned from it. By contrast, with the superpower rivalry gone, the rather turbulent politics of the lesser powers, particularly in the Third World, is likely to cause very frequent combat over the next few decades. Navies are likely to respond to the lessons, real and apparent, of that warfare.

For the sceptics, very minor nineteenth-century wars, such as the 1891 civil war in Brazil, had a disproportionate effect on the thinking of the major navies of the time, precisely because actual experience was so much preferred to theoretical projection. The major naval figures of the time said as much. For the present, all we can do is to try to guess how navies are likely to be used in the next decade or two.

What do navies do? They offer governments two unique services. One is to project power outside national boundaries; for example through presence to defuse a crisis. Navies are special in this regard, because they can appear and disappear without the consent of local powers. Also, warships can remain in an area for a protracted time. Thus, their presence does not force their owners to act precipitously: they need not exacerbate a crisis. For presence to be effective, ships must be able to operate within sight of a potential enemy, for a protracted period. The potential enemy must understand that ships cannot easily be neutralised. Power projection can also, of course, involve strikes against land targets, either using weapons or landing troops.

The other major naval role is to assert sea control. Classically, that has meant denying the sea to a national enemy. Increasingly, it also means controlling such illicit activities as smuggling (including drugs or illegal immigrants). Sea control may also mean the control of piracy in areas like the South China Sea. Generally, sea control entails wide-area surveillance, either by patrolling ships (which also act on their own observations) or by some kind of reconnaissance system which directs ships.

There is also of course sea supremacy, achieved through the destruction or neutralisation of an enemy fleet. That also requires surveillance, but on a smaller scale, because the object is only a single entity rather than many independent and widely dispersed ones.

Navies find themselves on both sides of several of these missions. For example, a fleet trying to project power will try to evade surveillance. Consequently, inexpensive surveillance systems may frustrate a navy employed mainly for power projection. On the other hand, they may be essential for the same navy's sea control mission. For example, in the Mediterranean, the US Sixth Fleet has been used to punish Libya for supporting anti-American terrorism. Had Libya possessed an effective means of detecting the Sixth Fleet well offshore, the fleet's mission would have become significantly more difficult. By contrast, the same US Navy employs extensive surveillance systems in the Caribbean in hopes of maintaining what amounts to sea control against drug smugglers.

Navies, then, are the only fully sovereign forces a government can deploy. Even so, sometimes they may have to cooperate with other governments' navies – accepting that difficulties may arise, because ships increasingly operate with

computerised combat direction systems. A cooperative operation might be, for example, a joint strike. The main strike asset of the joint fleet would presumably be aircraft. Ships in the force would use their data links to exchange identifying information; that is, to decide whether or not particular aircraft approaching the force were hostile. Aircraft are so lethal that any identified as hostile would be engaged immediately.

That presents relatively few problems for a force which shares common tactics and a common digital link, such as Link 11. What happens when some members of the force do not share that common system? There may be excellent reasons of state for including the other ships, and for placing them in forward positions. For example, Western governments probably very much want the Russians to join such coalition operations. There seems to be a place for some very adaptable carry-on Link 11 or Link 22 system.

A change in the post-Cold War world is that the number of simultaneous crises is likely to grow, simply because the states likely to cause crises are no longer clients of superpowers, intent on limiting the possibility of world war. Now, they are much more likely to act independently. For example, at one time Iraq was a Soviet client state and might have feared the withdrawal of Soviet support, had she attacked Iran or Kuwait. Iraqi dependence on the Soviets was limited because she had her own oil revenue. So the Soviets were unable to influence Saddam Hussein's decision for war against Iran in 1979. Later, when that war drained the Iraqi treasury, neither the Soviets nor Saddam's new Arab and US backers could veto what amounted to his bank raid against Kuwait. The Gulf War is not likely to be an isolated instance: it is more likely a pointer to an increasingly anarchic future.

Another vital point is that so many operations will now be undertaken in the ambiguous territory between peace and war, in the presence of numerous neutrals. Attacking neutrals causes embarrassment at least and may well cause abandonment of an operation altogether. But, the more fragile the ships, the greater the temptation to fire first in self-defence and the greater the chance that the wrong target will be hit. Furthermore, weapons are scarce, particularly for ships very far from home and from resupply. Hitting the wrong target results in weapons being unavailable when the correct one appears. So, anything that reduces the pressure to shoot first makes ships more employable .

OFFENSIVE POWER AND SURFACE WARSHIPS

Perhaps this is the point at which to consider the offensive firepower of surface warships. Presence means little unless the fleet present (or over the horizon) provides the local power with a real threat. Historically, navies could only assault

land targets with ship-based aircraft, ship-based heavy guns and marines. For medium navies, neither of the first two options is likely to be very viable, at least in the near term. Missiles like land-attack Tomahawk could offer an alternative. Certainly the US Navy has found that alternative attractive in the Gulf, during and after the Gulf War. At the least, Tomahawks on board a destroyer or a submarine do not impose the sort of gruesome personnel and operating costs imposed by a carrier. It would seem to follow that many medium navies will ultimately adopt Tomahawk, or some equivalent, as a primary means of projecting power against land targets.

The implications of such a choice should therefore be considered. First, although the missile may be extremely precise because, for example, of global positioning system (GPS)-based guidance, it carries a limited warhead. The post-Cold War world is almost certainly a non-nuclear world, at least for a considerable time. No 500lb or 1000lb warhead, however accurate, is equivalent to kilotons or megatons. The only way short of nuclear attack to levy really massive destruction on a land target is a mass bombing raid.

Precision attack makes sense only if it is supported by precision targeting, one of the major costs of such a system. The user needs precise intelligence. If a crisis arises quickly and unexpectedly, such information just may not be available, as was the case with Iraq during the Gulf crisis. Even if good intelligence is available, there may not be any point targets the destruction of which will be so impressive as to deter the other side. Typically, the victim does not really know how good or bad the attacker's intelligence is, and one advantage of a bombing raid (like that on Libya in 1986) is its demonstration of a capability to attack again, without showing that the bombers really did not know what to hit. An attack by a few expensive cruise missiles might be a very different proposition.

The other cost of cruise missile attack is the sheer amount of information the missile and the targeter needs. Unlike a ballistic weapon, a cruise missile must be guided throughout its lengthy and generally very low altitude flight, avoiding obstacles like buildings and power lines. To make the missile stealthy, it does not normally have a forward-looking sensor. Instead, the targeter must keep the missile clear of obstacles. To do that, the targeter needs an enormous amount of information, which can best be taken from satellite imagery. With the availability of commercial satellites, such as SPOT, that probably no longer requires a national imaging satellite capability. Of course, massive purchases of photographs of a particular place would tend to alert the intended victim, not merely as to the target but also quite possibly as to the approach route.

It also requires that a massive amount of information be sent to the shooter or launch platform. Unless a crisis is very predictable, ships going into action are unlikely to have all the necessary targeting data. They therefore need some means

of receiving many images in timely fashion, as well as some means of planning strikes. Information transmission is the more difficult of the two requirements, probably needing something akin to a television-transmission channel, via a civilian satellite.

In this future, navies offer governments the ability to intervene in a limited way, with limited liability. Any other form of intervention carries a real possibility that hostages will be presented at some stage. Withdrawal will necessarily be public and so will carry important costs. Realistically, governments will prefer some means of choosing when and how far to go, and when to retreat at minimum cost (including minimum cost in lives and hardware) if the state in crisis decides to increase the stakes. Also, states in an area in which naval forces are present may decide to increase the stakes by making it appear that their rivals have caused casualties. For example, there is some very suggestive evidence that the Iranians induced the Iraqi attack on USS STARK in 1987, hoping to end US support for Iraq in the war against Iran.

WARSHIP NUMBERS AND CAPABILITY

So the next few decades are likely to see an increased demand for sea-power, generally in the form of surface ships. Simultaneously, most navies will have to live with shrinking fleets. Individual ships are more and more expensive, so fewer can be bought each year. As the ships become more complex, the percentage of more highly paid crew increases, and crewing costs become more and more crippling. An additional, but rarely mentioned, factor is that the shore establishments required to support the operational fleet become significantly more expensive, so the percentage of the budget which can be devoted to ships declines. To make matters worse, the prognosis is for more combat, hence more damage to ships and perhaps more losses in the violent peacetime now at hand.

If funding is likely to remain tight, it will be vital to back the appropriate technology. Firstly, our governments will demand that their navies be able to cover numerous crises more or less simultaneously. Ships will much more often deploy in ones and twos than in classical groups. They will often have to fend for themselves. Secondly, if indeed sea control matters more and more, then it too requires that numbers of ships be available to cover the areas involved. The fewer the ships, the more efficiently they must be directed towards their targets. Incidentally, in this sense sea control is not too different from blockade operations, like the ones off Iraq during the build-up to the Gulf War. There, too, a relatively small number of coalition ships was used to cover a very large sea area, intercepting a fair number of target merchant ships. The blockade was successful because that small number of frigates and destroyers was efficiently directed.

For any navy, the number of ships available is the number which can be bought annually, multiplied by the expected lifetime of the ships. Lifetime of course takes into account likely war losses, although too often they are not included in planning estimates. For example, the US 600 ship navy was predicated on obtaining 20 hulls per year from Congress, and making ships last an average of 30 years (the Maritime Strategy determined what kinds of ships were bought, but the economics determined the number which could be sustained).

If Congress is now willing to fund only (say) five ships per year, the economic logic crashes the US fleet to 150 ships. Since the United States needs a larger navy, the only way out of the hole is to extend unit lifetimes. If, say, lifetime increases to 50 years, then the fleet enlarges to 250 units. If Congress buys ten 50 year ships each year, the ultimate fleet size is 500 ships. Of course, all that is simplistic; crewing costs are also very important and lifetimes vary from one class to another. However, the example does suggest that if numbers are a predominant consideration, then whatever extends ship lifetime is very important.

In peacetime, lifetime extension must mean a combination of durability and amenability to inexpensive modernisation. Durability implies a preference for larger hulls, which frequently is taken to mean more expensive. In fact, ship steel is quite cheap. Larger ships generally cost more because their hulls can be filled with more expensive systems. However, if that tendency can be avoided, then a large hull can be relatively inexpensive. The decision to add expensive weapons or other systems can be left until later. The USN Spruance Class is a good example of a relatively inexpensive hull, which proved large enough to accommodate considerable additions. Another advantage of a large hull is that it is considerably more habitable. Although little can be done to reduce the price of the individuals aboard a given ship, a better retention rate can reduce the need for training facilities, and thus can help control personnel costs.

Sheer size also carries a major advantage: capacity for weapons. If medium navies are not to invest in aircraft carriers, then their major offensive weapons are likely to be cruise missiles. Numbers count! Each missile is no more than a very precisely guided 500 or 1,000lb bomb. No other surface ship is likely to match the 2,000 tons of ordnance aboard a large carrier (nor is any surface ship likely to be replenished with cruise missiles at sea) but at least the potential to fire more than, say, eight such weapons seems likely to be quite valuable.

The weapons need not be on hand; what counts is ships having the capacity to take them aboard when and if they are needed. That capacity cannot be extemporised, because the missiles take up ship space and top weight. Vertical launcher cells are so inexpensive that it seems foolish to limit the number to the number of missiles that can be bought at any one time. Also, a prospective opponent can

never be quite sure of what is in the cells. The missiles themselves, of course, are hardly inexpensive.

Amenability to modernisation is surely a central concern. In some sense it means open architecture, since it is virtually certain that requirements will change over the lifetime of a ship and therefore that new or different equipment will be needed. Several current developments are encouraging. First, vertical launchers can accept a wide variety of different weapons and they do not seem to require modifications for new ones. Second, several current command systems, such as that in the ANZAC Class, are essentially modular. At least in theory, new consoles and new functions are relatively easy to add.

Perhaps the best illustration is the Danish Stanflex 300, a corvette designed to exploit the basic flexibility of the system, by changing roles quickly and easily. It would not be a great flight of imagination then to imagine the system accommodating new processors, carrying new applications. Presumably, one key to modernisation would be an open software architecture in which each application, or each console, was sufficiently buffered from the others that it could be changed without affecting the total system. Physically, the key to such systems appears to be the use of data buses, so that changes in ship configuration do not require rewiring on any massive scale.

SURVIVABILITY

If the prognosis with which this chapter began is correct, navies are likely to see not only much more use but also more combat. Because ships are expensive, the world combatant building base is likely to shrink as navies funds remain limited. Therefore, quick replacement, which is already less than easy, will if anything become more difficult. Ship survivability then becomes an extremely important theme. Moreover, if ships often deploy singly or in small groups, then they should be prepared to take hits without losing all combat capability, since they may have to fight their way out of trouble.

That may seem to be asking a great deal, in an age in which the received wisdom is that a single missile can put paid to a very expensive warship; indeed in which some would advocate eliminating surface warships altogether, on grounds of vulnerability. However, examination of the record will show that remarkably few ships have actually been sunk by missiles. Most of those which have been hit have been put out of action. For example, the frequently cited case of HMS SHEFFIELD was really one in which the crew was forced to abandon the ship, which succumbed a day or so later to a storm. Had the crew been able to remain on board, the ship might well have survived, albeit without combat capability.

One relevant question is whether missiles are becoming so lethal that the hull itself cannot be expected to survive. At present, the answer seems to depend on whether many navies adopt Soviet-style missiles, with their very large warheads. If not, unless someone adopts an under-the-hull weapon, missiles just will not be ship-killers: they will be ship-disablers. If the missiles do gain larger warheads, then larger hulls may still be able to survive: whatever warhead is used, it has only a finite damage radius (the exception would be an area weapon such as a bomblet dispenser).

SURVIVABILITY AND SYSTEM DISTRIBUTION

What then of combat capability? Ideally, there should be as much distribution as possible around the hull, so that no single hit can disable. At present, a ship is a mass of single-point vulnerabilities. At her core is a combat direction system, often built around a single computer (carrying the tactical picture) and invariably concentrated in a single space. Machinery is concentrated in one or two spaces, because shaft lines determine internal configuration. Weapons are also tightly concentrated, often because a mechanical launcher cannot be separated from its magazine.

The current concentrated architecture can be described as vulnerable, not merely to hits but also to the stress of age. The old concentrated combat direction system had a spider architecture, in which all sensors were connected directly to the single computer, which was also connected directly to the ship's fire control system. Modernisation inevitably meant either removing or duplicating those direct connections. Even if replacement sensors or weapons were no heavier than their predecessors, the weight of copper wiring high in the ship added top weight. Similarly, a major change to machinery is expensive, because of the prime mover and also the gearing and shafts. In effect, anything which buffers ship elements from each other makes replacement easier and cheaper. That may mean replacement in refit or it may mean hasty repair after battle damage.

We are all familiar with these ideas in civilian life. A household electrical supply system is bused, meaning that one set of wires serves all the appliances in the house. As long as the wiring is not overloaded, there is no need to rewire when any one appliance is replaced or added. Data busing is familiar in many computers: it is why they can accept added functions in the form of cards. It was not always so. When houses were first wired, they had separate wires leading from the outside line to different outlets; an unsatisfactory arrangement. With computers, a spider rather than a bus architecture turns out to be more efficient, but difficult to modernise. Of course, the issue for data busing is whether the bus bought when the ship is built has sufficient capacity to last the life of the ship.

For shipboard sensors, data busing carries another potential advantage. At present, sensors are rather rigidly divided into functional areas: AAW, ASW and so on. However, it is not nearly so obvious that they really are distinct. For example, a low-frequency sonar can act as an under-the-horizon sensor. If a single bus carries all sensor data, then, in theory, all sensors can contribute to a common tactical picture. Incidentally, if more submarines come to fire anti-ship missiles, it will become impossible to separate ASW from AAW, so the sensor combination envisaged will become inevitable.

None of the current vulnerability is inevitable. Secondary combat direction centres are feasible. Indeed, Taiwan's Navy almost bought a frigate with exactly that arrangement. In that ship, the damage control centre would have been designed to function as a combat direction centre in the event of the main centre being disabled. The key technology was data busing. A single unified bus would have carried all combat system and own-ship data. Standard workstations would have been installed in both CIC and damage central, and all would have carried both the tactical picture and, presumably, an own-ship picture. The combination would have been practicable because own-ship data would have taken up far less bus capacity than combat direction data. One incidental advantage of automating damage control to this extent would have been the availability of expert-system advice in the event that the most experienced damage-control personnel were killed or disabled. That happened in the case of USS STARK and almost resulted in the loss of the ship.

Nor need other ship systems be concentrated. With the advent of vertical launchers and command uplinks, missiles need no longer be concentrated in small blocks along a ship's centreline. That is already obvious in designs such as the Dutch M Class frigate, in which missile launchers are lined up along the ship's helicopter hangar. In this case, the positioning was adopted to save ship length. But, the launchers could be situated along the ship's side, in such a way that an explosion at any one launcher could not destroy the ship by mass detonation. Moreover, a single such hit would not deny the ship all her weapons. Even if the cells are concentrated, they may be so designed that an explosion in the missile cells will vent rather than destroy the ship.

That still leaves the antennas which direct the weapons. Duplication can help. It may also be possible to adopt broad-band active arrays, in the hope that any one hit (by a fragmentation weapon, for example) will not knock out the entire antenna. The importance of broad-banding would be that arrays could be shared by different sensors and communications systems. Without sharing, true dispersion would be very difficult. The key technology here would seem to be the solid-state transmit/receive module.

For machinery, one possible solution is turbo-electric drive. Ideally, ships' propulsion and auxiliary powerplants could be unified, and the prime mover broken up into several turbine-generator combinations, both above and below the waterline. Propulsion would be by podded motors, perhaps fore and aft. If this were feasible, then no single hit could deny the ship propulsion. This is not, however, a trivial proposition! For example, the use cycles of the main and auxiliary powerplants are rather different. An elaborate software-controlled switchboard would be needed to allocate power on a dynamic basis. The distributed plant would weigh a good deal more than current plants, and internal ship arrangement would be complicated by the need for multiple up-and down-takes. The result could be justified only by the paramount need to survive as a fighting unit, after taking one or more hits.

SURVIVABILITY AND EXPOSURE

This approach is very much the old-time religion of naval construction. A notable feature of any older surface warships was the attention to back-ups. The designers, even of destroyers and frigates, expected their ships to take hits without being put out of action. No one ever imagined that a destroyer, for example, could shoot down a 14-inch shell.

What changed? With the advent of defensive missiles, the incoming weapon could often be shot down. That eventually came to mean that ship survivability in combat equated to the ability to beat off missile attacks, either by shooting them down, or by deceiving or jamming them. If ships have sufficient warning and a sufficiently reliable weapons system, they are expected to deal with attacks up to some saturation limit. However, there is a serious problem. Ships on presence missions must expose themselves to surveillance by potential enemies. Rules of engagement make it difficult, if not impossible, to shoot first. Additionally, many commanding officers will refuse to activate automated self-defence systems in what they rightly regard as circumstances short of war. Inevitably, then, many ships will take hits.

The Cold War had an invisible effect on this thinking. The main participants, at least in the West, assumed tacitly that, should 'Cold' turn 'Hot' the war would be short and extremely violent. In that context, any ships so badly damaged that they would be out of action for more than, say, a few weeks, would be in effect, lost-at least for the duration of World War Three. Graceful degradation would be worth very little.

The concentration on active defence against missiles became a concentration on avoiding being hit. It led, eventually, to an alternative approach in which the

ship's radar signature was minimised in hopes of avoiding missile attack altogether. The French La Fayette Class frigate is a case in point. The problem is that ships should survive, not merely to avoid unpleasantness, but to accomplish offensive missions (presence is a latently offensive mission, in this sense). The greater the emphasis on stealth, the more the offensive attitude is likely to be crippled.

Thus, for surface warships of the future, the likely technological themes would seem to be openness to modernisation and raw survivability. There are of course exceptions. Fast attack craft are viable to the extent that they can avoid being sunk before they fire their missiles. For them, extreme stealth presumably pays off, though even in their case one would have to wonder whether stealth will always be very viable. For larger ships, stealth pays only so long as it does not come to dominate thinking. Thus, limited measures can be very valuable. Radar-absorbing material can be spread around ships' topsides (incidentally, perhaps biasing missile hits away from vital areas). Ships can also be equipped with low-observable radars.

SURVIVABILITY-EARLY WARNING AND TARGETING

Clearly, we still want to be able to beat off attacks, which means we would still like early warning of approaching missiles. There are some interesting possibilities, including high frequency (HF) surface-wave radar. HF signals propagate both as surface waves and as sky waves: the surface waves adhere, in effect, to the water surface out to about 180nm. Relatively simple antennas, typically used for high frequency direction finding (HF/DF) can pick up reflected signals (the best transmitting antenna is probably a simple omni-directional whip or line). Gain is very low, so the antenna will not receive echoes from targets much beyond 20 or 30 miles away, but that is still much better than with conventional radar.

The drawback is that the low-gain antenna does not form beams, so it will register an average bearing for two missiles arriving simultaneously. Infra-red detectors can pick up the plumes of the missile motors beyond the horizon, though in their case the bearing may be inaccurate if the missiles manoeuvre as they approach. The point is one of emphasis: as long as we accept that ships will be hit, we can work harder at self-defence, without losing sight of the essential offensive role of the surface warship. If that priority is lost, then any investment in surface ships is likely to be wasted. Navies must be more than self-protective entities.

The larger theme seems to be how to make do with fewer ships. Until very recently, large numbers of relatively low-capability patrol vessels were available,

partly as the fruit of Cold War building programs. Sea control, in particular, demands numbers, yet as time passes numbers inevitably fall. The inescapable conclusion is that the existing numbers must be used more efficiently. Here some US experience may be relevant.

About 20 years ago the US Navy decided to deploy the anti-ship version of the Tomahawk missile. At that time, the Navy had no real interest in keeping track of world shipping. It was enough to know where Soviet ships were (the threats to US carriers). Strike targets were ashore, and they had been known for many years. Tomahawk, it was hoped, would provide the USN with a relatively inexpensive counter to the array of Soviet anti-ship missiles, particularly Shaddock (SS-N-3). The relatively inexpensive part was vital, since available money was going into higher-priority areas, such as ASW and AAW.

At first it seemed that this would present no great problem, since there were already forward intelligence centres keeping track of major Soviet units (essentially to warn the carriers of danger). There were two rubs. Firstly, the missile would take about half an hour to get to its target, during which time the target might well move. Secondly, and potentially far worse, the target would be immersed in other shipping. Examination of Soviet arrangements to target SS-N-3 against US warships brought the embarrassing revelation that the targeting system was elaborate and expensive precisely because it was intended to avoid firing at the wrong targets. For example, the Soviets assigned tattle-tale surface ships to the US Sixth Fleet, mainly so that they could tell attackers which ship in the formation was the carrier. To make matters worse, the Soviets were expected to disperse their ships among merchant ship traffic. The US Navy would need, not a few tattle-tales to deal with a few concentrated formations, but one tattle-tale for each missile shooter. This was altogether impossible.

The solution was twofold. Firstly, if ships were observed on an intermittent basis their courses could be projected ahead, at least statistically. Tomahawks could indeed be aimed at expected ship positions, and they could be expected to hit a large proportion of the time. The statistical process would be particularly effective if nothing in the sea surveillance system warned the potential victim. That was clearly true of any system which merely collected data on numerous ships and never overtly tracked specific ones.

Secondly, that sort of statistical wide-open tracking would generally collect data on all shipping in an area. The question was how much of that data to provide to potential missile shooters. Initially the view was that the shore stations would develop the best possible data and then send out discrete messages called high-interest target signals (HITS). A shooter receiving a HITS message could fire on that basis. However, it could not plan a Tomahawk strike effectively, since other ships might well be present, and since they might attract the missile's attention.

The solution had to be to provide each shooter with as complete as possible a picture of the shipping in the area around any potential target. In practice, that has meant supplying each shooter with a world shipping picture, or rather with a computer capable of building up such a picture from periodic updates.

There was a further rub. In 1975–1980 the US Navy lacked sufficient sensors to develop the required picture. However, within the larger US intelligence community, much of the required data could be found, albeit in places hardly amenable to tactical use. The Navy seriously considered building up the necessary information-gathering system, but instead, the national intelligence agencies were persuaded to provide the necessary data, under a program called Tactical Exploitation of National Capabilities (TENCAP).

For ship tracking, the main sensors were probably electronic intelligence gathering systems. Ships could be identified by their radar and even their radio emissions, and the sensors would have had sufficient resolution to locate the emitters on the earth. This was not code-breaking, but the main sensors were probably those deployed by the National Security Agency (NSA). Indeed, the information passed to the Navy was probably that routinely discarded by NSA. Later, the imagery collected by the Central Intelligence Agency's (CIA) National Reconnaissance Office was presumably provided to the Navy for Tomahawk land-attack mission planning, also under TENCAP.

The great significance of TENCAP was that it broke down an important Cold War barrier between national intelligence, which in effect was collected to fight the possible future nuclear war and current tactical intelligence, which was very nearly current sensor data. This is not merely a bureaucratic barrier. Intelligence is generally very tightly controlled, because revelations can destroy the source. One does not, for example, casually reveal the telephone tap placed on some national leader's secure telephone. On the other hand, sensor data are used quite casually: there is no great secret in the existence, say, of radar or of an infrared tracker. TENCAP was an intermediate case, in that it exploited sensors with which an enemy might not be quite familiar, and which might be neutralised by, for example, really scrupulous radar silence. Thus, it might well be argued that TENCAP data had to be handled differently from normal sensor data.

And, of course, TENCAP and other over-the-horizon data were not like ordinary sensor data in that they were always somewhat time-late and never quite reliable. Yet, they were vastly better than the organic data they supplemented: they allowed Tomahawk shooters to engage beyond their horizons.

NEW TECHNOLOGIES

Initially, shipboard computers were rather expensive. However, with the development of very powerful civilian work-stations, it became possible to provide the world shipping picture to virtually every US surface combatant. The resulting system, joint operational tactical system (JOTS) proved remarkably effective in supporting the blockade of Iraq. JOTS was provided to many US allies, including Australia. It may be a good point of departure for any future sea-control system for regional powers.

The core of the system is the shore station which assembles a shipping picture from disparate sources of information, such as radio intercepts and patrol plane sightings. The shipboard computer then, is only the visible tip of a very large iceberg. In the successor system, shipboard computers are powerful enough to participate in assembling the total shipping picture, but the overall logic is the same: a series of intermittent observations of individual ships is developed into a dynamic picture, suited to tactical action, through a statistical ship tracker.

All very well; but the US government has spent considerable money on satellites and other intelligence sources. What can a medium regional power do? Firstly, it is by no means clear that space is the right locality for primary intelligence collection, since to cover a regional area, the power might have to deploy low-altitude satellites which would spend most of their time elsewhere. A geosynchronous satellite presumably would not enjoy sufficient resolution to be tactically useful. However, long-endurance unmanned aerial vehicles (UAV) might well be worth while in this role.

Clearly, maritime patrol aircraft are natural contributors to the system, at least for their ability to identify ships which may be detected and tracked by other means. To participate effectively, they need their own terminals to display the agreed shipping picture, means of precise location and means of communicating with other system elements. The current US system 'Outlaw Hunter' employs an imaging radar (for identification). Each aircraft also has a GPS receiver and both satellite and Link 11 capacity.

Other sensors may also be useful. Australia currently operates a very long range over the horizon (OTH) radar system, which reportedly can detect and track some shipping. Another OTH technology, surface-wave HF radar, is currently being marketed. It promises solid detection out to about 180nm from a shore site, assuming that the site is sufficiently large to support a high-gain antenna. This type of radar can, in theory, detect aircraft out to about 250nm. If the intended targets of the surveillance system use HF radio, they may also be subject to long-range HF/DF. If not, then they can be detected (intermittently) by any overhead or nearby surface platform.

Ships and smaller craft also have acoustic signatures. In theory, an underwater surveillance system can detect and track them. Indonesia reportedly bought just such a system to monitor surface traffic in Lombok Strait. Depending on bathymetry, surface ship towed arrays might also be useful surveillance tools. Bathymetry would also affect a fixed surveillance system, but it would be easier to develop a system suited to shallow water than to adapt towed arrays to such conditions.

The important point is that, if there is a data fusion centre (or cooperative data fusion by the platforms) all available information can be melded to form a more or less coherent picture. The precise nature of the intelligence-gathering systems is less important to the melding process.

Space assets are still essential to such a system. All units participating in it must know precisely where they are; otherwise the shipping picture cannot be of much use. GPS offers this level of precision very cheaply, and could well be the prerequisite for distributing the picture on a cooperative basis to small patrol units.

Additionally, the communications link which distributes the shipping picture almost has to use satellites, simply because HF radio (the only long-haul system which does not use satellites) lacks the necessary capacity. Satellite communications carries the vital advantage that the up-link generally cannot be counter-detected by prospective enemies (and almost certainly not by smugglers).

At present, surveillance is generally done by patrol craft with radios but with few if any computers, and certainly without elaborate satellite data links. Why invest a fortune in that technology, which inevitably means larger offshore patrol vessels and much more expensive command and control systems? The answer must be twofold. Firstly, as patrol boats wear out, their successors will be fewer. The demands on navies are likely to grow, not to contract. More will have to be done with fewer people. Each OPC will have to be far more efficient than any of its predecessors.

Incidentally, the experience of the Gulf War embargo suggests that OPVs will need helicopters, since in rough weather a good-sized merchant ship can easily operate where a rigid inflatable boat (RIB), the boarding craft of choice, cannot. A good-sized OPC can still launch and recover a helicopter in such circumstances, particularly if it is stabilised. If indeed ship steel is cheap, this consideration suggests that it might be an intelligent policy to build frigates and OPCs to a common design; merely equipping the OPCs on a less elaborate scale (which could be upgraded if necessary).

NAVAL AIRCRAFT

Let me conclude with some thoughts on naval aircraft For most medium navies, they are a mixture of shipboard helicopters and shore-based maritime patrol types. Firstly, all of them become important members of an overall surveillance system. All therefore need precise navigation (GPS, presumably) and sufficiently good gyros to know where their sensors are pointing. All need to be tied into the overall surveillance system, though presumably the helicopters can be tied in through the ships operating them.

Perhaps the most interesting airframe developments are in long-endurance UAVs, which can provide electronic surveillance (passive rather than active radar) and also data link relay (the poor man's satellite). Full-day endurance is already unremarkable. It is possible that soon there will be solar-powered electric UAVs, capable of carrying small surveillance payloads and remaining aloft nearly indefinitely.

Most current airframe work seems to be concentrated on high-performance aircraft, offering such features as stealth (mainly against radars) supersonic cruise (supercruise) and supersonic VSTOL performance. Clearly, widespread use of stealthy attack aircraft would bring with it a revival of lower-frequency (probably metric-wave) shipboard radars. Such aircraft might also be vulnerable to infra-red (IR) sensors; perhaps on board UAVs operating overhead. Any missiles used against really stealthy aircraft might need to be command-guided, since their targets would be detected by combinations of sensors, perhaps on several platforms operating together. Since detection might be quite difficult, such aircraft might well score hits before they could be engaged. They would further justify the arguments above for pushing for greater ship survivability.

Supercruise might be associated with a possible trend towards supersonic anti-ship missiles, with shortened times for decision-making. Again, this would encourage automated responses, unless the ships of the future can withstand some hits, without either becoming incapacitated or sinking. In a Cold War context, automated reaction was a reasonable concept because the boundary between peace and war seemed clear. Now that the Cold War has faded, and that circumstances are likely to be far less obvious, full automation seems much less attractive. Government decision-makers at the Foreign Office level are likely to feel the point especially strongly.

Then, there is STOVL, which is often considered the great hope of restoring airpower to lesser navies. Clearly, such aircraft work, and clearly they can be flown from aircraft carriers of moderate size and cost. Nevertheless, there is much more to making an effective aircraft carrier than merely being able to support a few aircraft. Much depends on the capacity to sustain operations and to

accommodate a reasonable ordnance load. At the least, the fleet supporting the carrier may have to take over some of the roles which, in a larger ship, might fall to supporting aircraft, such as area air defence or early warning. Having said that, a STOVL carrier may be inexpensive enough to be affordable, particularly if it is built to civilian standards. That was, after all, the case with the Colossus Class carriers which proved so successful in several medium navies in the years after 1945.

11 Surface Operations in Tomorrow's Asia-Pacific

CHRIS BARRIE

THIS chapter provides an overview of surface operations in tomorrow's Asia-Pacific, focusing specifically upon:

a. likely capability developments and their implications for regional navies,

b. the affordability of these developments for regional navies,

c. the kinds of operations regional surface forces are likely to be involved with in Asia-Pacific in the future, and

d. likely developments in the threats to surface ships and possible responses to these threats.

A later chapter will examine one particular aspect of this subject; issues relating to the design of Australia's future offshore patrol combatant.

STRATEGIC OVERVIEW

We begin with a brief strategic overview, to provide some perspective on future surface warship operations in Asia-Pacific. As earlier chapters have suggested, in examining some of the strategic considerations likely to shape our region in the twenty-first century, Australia can expect to face a region perhaps best described as benign *but* uncertain.

From a maritime perspective, the regional trend for navies to assume a higher profile in national security will continue. Historically and traditionally, many regional countries have relied upon armies for security. Admiral Roy, in his chapter, writes of 'India's continental mindset and associated seablindness' while other commentators have frequently remarked upon the region's inward-looking focus upon security issues. Post-Second World War conflicts and periods of tension have often been over disputed land borders or threats to internal stability. Clearly, in these situations, armies are the most useful security option.

However, the recognition of the significance of maritime issues – trade and offshore resources to name but two, are encouraging these countries to adopt a more outward focus for their future security. A quick glance at any atlas will confirm what most of us already appreciate: that the Asia-Pacific region is fundamentally maritime in nature. Put simply, most of the region is dominated by the sea – by the Indian and Pacific Oceans, and by various other seas. In comparison with Europe, for example, there is a smaller land mass, and there are significantly fewer continental borders.

This maritime dominated geography means that regional countries must confront a series of issues which may threaten their security and which are unique to the Asia-Pacific region. In particular, competition for increasingly scarce resources – offshore oil, gas and fisheries for example – are already resulting in complex maritime delimitation disputes. The UN law of the sea conventions relating to exclusive economic zones and archipelagic waters will face strong tests in these regional waters. The Spratly Islands dispute is simply the most prominent at this time. The new century may bring many more such disputes.

Of particular importance for regional maritime forces, is that the volume of maritime trade in Asia-Pacific is predicted to grow by as much as seven per cent each year for the next 20 years. Interestingly, Dr Henry Kissinger remarked recently that by the year 2020, he expected APEC to account for 70 per cent of world trade.

There is also a significant trend developing towards an increasing level of economic *interdependence* in the region. In this kind of strategic environment, clearly it is in every country's interest to keep SLOCs open and to protect maritime commerce. Most significantly, this is the strongest justification for the region's approach to cooperative security.

The 1994 Australian Defence White Paper; *Defending Australia*, states:

> Over the next fifteen years, the strategic environment in Asia and the Pacific is likely to be more demanding and to be determined, more than ever, by the policies and approaches of regional countries themselves. Australia's engagement with countries in Asia and the Pacific as a partner in shaping the strategic affairs of the region will thus become an increasingly important element in ensuring our security.

In summary then, Asia-Pacific security in the next century will have a significant maritime dimension. Ensuring the security of maritime trade and offshore resource zones will encourage all regional countries to develop and sustain capable maritime forces. Importantly, the vastness of regional waters will determine that, with the possible exception of the United States, no country will be able to act alone. Cooperative regional security will be critical.

LIKELY REGIONAL CAPABILITY DEVELOPMENT

What kinds of capabilities will navies need in the Asia-Pacific region in the 21st century? The first point that needs to be made is that this issue must be kept in perspective. It would be wonderful to put together a 'wish list' for all sorts of platforms and weapons systems. However, few regional countries have the industrial capacity or the operational experience to develop new capabilities on the scale of countries such as the United States. Carrier aviation, nuclear powered submarines and ballistic missiles will be beyond the capacity of most regional countries to afford, operate and to support.

Nevertheless, in general terms, there will be a trend to more capable surface vessels, with better equipment, better logistics support and better trained people putting to sea in Asia-Pacific in the next century. Specifically, there will be developments such as:

a. an increasing number of more capable submarines: Thailand and Malaysia have shown some interest in purchasing and operating submarines. Singapore has announced the purchase of a submarine. Indonesia and South Korea will probably upgrade their submarine fleets, sometime early next century. A little further into the future, capabilities such as air independent propulsion, submarine launched cruise missiles and wake homing torpedoes could be relatively common in regional waters.

b. improved organic airpower: non-helicopter capable ships will be a thing of the past regionally, although organic airpower will by and large mean helicopters. However, the United States and India will undoubtedly retain an aircraft carrier force, while all regional countries will watch the developments in Thailand with interest. Advances in sensor and weapon technology will make these helicopters far more capable than at present.

c. improved sensors: three dimensional, phased array, synthetic aperture and over the horizon radar technology; infrared and other electro-optical sensors; unmanned vehicles and towed array sonars will dramatically improve the quality of information available to commanders in the region in the 21st century. There is also great potential for the regional development of satellite based sensors.

d. wider availability of stand-off weapons: regional maritime forces will be operating not only Harpoon and Exocet successors, but also the successors to Tomahawk and other highly capable precision guided cruise missiles.

e. more capable munitions: guided, longer range projectiles and fuel-air weapons may become widely available.

f. more efficient, higher output propulsion technologies: combinations of gas turbine and diesel propulsion will remain in service for some years to come. There is also potential for the development of alternative propulsion technologies, including superconductor propulsion.

g. higher speed more stable hull forms: the displacement hull will be around for some time, but technologies such as small waterplane area twin hull (SWATH) hydrofoil, surface effect and wave piercing hull forms will become widespread throughout the Asia-Pacific region, particularly in archipelagic waters.

However, the biggest change likely to be seen in the region, in terms of capability development, will be in C3I and in command and control warfare (C2W). Rapid, almost exponential growth in the capacity of computers to process data – in terms of volume and speed – have seen great challenges set in the field of information technology, C3I and C2W in the past few years. How well various countries meet these challenges and incorporate the information from a new generation of sensors, is likely to determine the effectiveness of maritime forces in the 21st century. Some of the key issues include: interoperability, security, affordability, survivability and flexibility. These issues need to be examined in a joint environment, by navies, armies and air forces, and in a combined environment; that is by the armed forces of regional countries acting together.

In summary then, with a few exceptions, countries in Asia-Pacific are still some way from acquiring and operating the types of capabilities listed above. It is critical to stress that technology forms only one part of the capability equation-support (logistics and training) and people are other critical elements.

REGIONAL AFFORDABILITY OF CAPABILITY DEVELOPMENTS

How affordable are these kinds of capability developments for regional countries? Leaving aside developmental costs, which are beyond the capacity of most Asia-Pacific countries, with the exception of the US and Japan and some other nations with specific skills in some areas, the affordability of new capabilities may become a key determinant for regional security in the new century. Countries such as Australia and New Zealand, and even the United States, will continue to operate under tight budgetary constraints for the foreseeable future. Pacific island nations will also have limited resources available to spend on security and will need to invest most carefully.

However, Asian nations are likely to be less constrained. Sustained economic growth will allow investment in new technologies and capability improvements

at a rate exceeding that of other regions in the world. Interestingly, the economist, Professor Wolfgang Kasper, noted in 1991 that:

> Should tensions in the region increase, the Asian nations will be able to raise the share of their national product committed to defence fairly easily. But they will probably not do so without need, as the economic development priority is deeply entrenched and the leaders realise that defence spending is done at the expense of future growth.

LIKELY SURFACE OPERATIONS IN THE ASIA-PACIFIC REGION

Turning to the type of surface operations that navies will be likely to undertake in the next century, fundamentally, they will be similar to those conducted now. The frequency and volume may increase, but the following surface roles will remain key elements of regional maritime forces' concepts of operations:

a. surveillance,

b. maritime patrol and response,

c. protection of maritime trade,

d. protection of offshore resources, and

e. strategic strike.

Having made that point, there is also a strong possibility that we will see an increase in the so-called 'constabulary roles' of navies. In proposing the likely strategic environment of the Asia-Pacific region in the next century earlier in the chapter, there was mention of the potential for an increase in the number of maritime boundary delimitation disputes. These disputes, and increasing competition for scarce resources, may see surface forces increasingly engaged in operations such as:

a. maritime peacekeeping (maritime boundary disputes, regional humanitarian missions);

b. anti-piracy/terrorism operations; and

c. operations in support of environmental concerns.

SURFACE SHIP THREATS AND RESPONSES

There is also a need to examine the kind of threats which surface ships expect to face, and how they will deal with these threats in the future.

Students of maritime history would know that the demise of the surface ship has been predicted for a hundred years or so. Threats from submarines, aircraft and missiles have proved very dangerous, but not as decisive or final, as their proponents first thought. Consequently, although the environment in which surface ships will be operating in the new century has the potential to be far more hazardous, surface platforms will continue to play an important role.

This is an important point. Frequently, the argument is advanced that the increased numbers and increased capability, of submarines, and the increased numbers and capability – particularly range – of land-based aircraft, will mean that surface ships will not survive in the Asia-Pacific of the future. The argument continues that, because of this perceived vulnerability, the roles formerly performed by surface ships will have to be performed by other means. But, this is unlikely to occur. The range, endurance, sustainability and 'presence' of surface ships, plus their inherent flexibility, will determine that they will continue to play a critical role in maritime operations in the region.

Returning to the likely threats to surface ships, perhaps the most significant threat posed to surface ships, and certainly the most frequently debated, is that posed by the new generation of anti-ship missiles. High supersonic speeds, in excess of Mach 3 and more discriminating seeker heads and targeting algorithms are frightening developments for surface warfare proponents. However, the continued evolution of systems and weapons which allow layered defence of ships, with a combination of soft and hard kill defences, will reduce, although not negate, the threat posed by these missiles. The next generation of close-in weapons systems (CIWS) Nulka and high speed, agile surface-to-air missiles will be relevant in this regard.

The affordability of new technologies and capabilities is important. But in addition to high-technology, high-cost threats such as Mach 3 missiles, surface ships may also face the very real threat of a relatively low-technology, low-cost weapon in regional waters – the mine. The lessons of the 1991 Gulf War and USS TRIPOLI are being learnt, and the investment across the region in minewarfare capabilities is quite noticeable.

The dependence on limited communication channels by surface ships may see them become increasingly vulnerable to exploitation by computer viruses and electromagnetic pulse weapons. Far more likely however, will be the increasing vulnerability of surface ship sensors to combat-related damage. The exposed position of radar arrays, optronic sensors and aerials means that any damage inflicted on surface ships has the potential to blind those ships. Since the early 1980s and the Falklands conflict, navies have devoted much time and effort to improving the 'survivability' of ships. However, a disabled ship that survives, but is not capable of fighting, simply becomes a burden to the force commander.

Maritime forces need to focus some attention on improving the 'fightability' in concert with the 'survivability' of surface ships.

CONCLUSION

Maritime forces in Asia-Pacific in the next century can expect to face a more complex and uncertain operating environment. There will be a strong emphasis on maritime forces to provide security for nations' trade and offshore resource zones. The steady increase in trade among nations of the Asia-Pacific region will continue to reflect the development of a region of increasing economic interdependence. This growing interdependence will require some form of cooperative security.

Regional navies will be heavily committed to a range of surface operations which will not differ greatly in kind from those we conduct today, but will perhaps differ in scale and execution. Joint and combined operations will be the order of the day.

Asian nations, in particular, will be able to afford investment in new capabilities which will cover a range of emerging technologies relating to hull design, propulsion, sensor fit and weapons systems.

Clearly, navies will find this kind of environment a very challenging one in which to operate.

12 Maritime Air Operations – The Naval Aviation Contribution

DAVID J. RAMSAY

THIS chapter on the contribution of naval aviation to maritime air operations in the 21st century will cover current and future developments in RAN shipborne aviation, in conjunction with the scene set by Rear Admiral Barrie's chapter on surface warship operations in tomorrow's Asia-Pacific. It will also complement Group Captain Harvey's chapter on the Royal Australian Air Force's (RAAF) significant involvement in maritime operations. It will describe the nature of naval aviation operations and emphasise the critical importance of joint and combined interoperability, as the limited number of RAN aircraft face up to the immense task of surveillance, patrol, response and combat operations in the vastness of our region.

CURRENT AVIATION FORCE

Australian naval aviation is on the threshold of an exciting era, with projects under way to ensure that every major RAN surface unit will have an integrated naval aviation capability. Current developments within the RAN's aviation force are concentrated in the Seahawk and Sea King helicopters.

The Sikorsky S-70B-2 Seahawk helicopter is the Fleet Air Arm's (FAA) most capable aircraft, with good sensors, range and endurance. The RAN currently operates 12 aircraft with four in attrition reserve. All six FFGs are planned to have fully integrated double crewed flights by the end of 1997. The Seahawk can operate at a considerable distance from its parent ship, conducting independent operations including ASW, surface surveillance and over the horizon targeting. The RAN variant features a role adaptable weapon system (RAWS) which is designed to permit relatively easy role changes and system upgrades. Aircraft sensor information is relayed by data link to appropriately fitted surface units, but there is significant scope for enhancement with advances in communications technology. A proposal to introduce the four attrition Seahawk aircraft into the operating pool is being considered and the Seahawk will support the FFGs until life of type, planned for around 2020.

The RAN operates six Sea King SK50 helicopters which were acquired in the mid-1970s as carrier borne ASW aircraft with dipping sonar. They are currently being refurbished and converted to the utility role, as they have an excellent passenger and cargo carrying capacity. The life of type extension refurbishment includes upgrading of the radar, avionics and communications, for the aircraft to remain in service until at least 2008. Whilst primarily employed in the fleet support utility role, the Sea Kings are ideal platforms for logistics over the shore (LOTS) support for ground forces deployed from the recently acquired training and helicopter support ships (THSS).

In addition to these principal helicopter types, the Fleet Air Arm operates six AS 350 Squirrels for training and light utility duties. These aircraft are still employed as the interim FFG helicopters, pending full availability of the Seahawks. They will also become the interim helicopters for the ANZAC ships, pending availability of the new intermediate helicopters for those ships. The Fleet Air Arm also operates several Bell 206 Kiowas, for light utility work in support of survey operations carried out by HMAS MORESBY.

CURRENT AND PLANNED DEVELOPMENTS

RAN policy is for all major fleet units to be air capable. Accordingly, the two new hydrographic support ships will have aviation facilities. Although they will be capable of fully supporting the operation of intermediate size helicopters they will not normally employ a helicopter for their survey tasks as HMAS MORESBY does now.

The two training and helicopter support ships will be modified to embark and operate Army Blackhawk and Navy Sea King helicopters, and to receive the recently acquired Army Chinook helicopters. The full scope of naval aviation operations from these ships is still being assessed. It may range from periodic short detachments exercising embarked operations, to significant involvement in logistics over the shore operations, thus freeing the Blackhawks for their forward mobility role. Clearly, in our maritime and archipelagic region, multi-aircraft platforms like the THSS offer great flexibility to the Government in its response to a wide range of challenging scenarios. They are national assets with which the RAN can exercise influence, exert will, or simply do good by assisting in disaster relief.

Under a project for which tenders have recently been sought, the Seahawk helicopters will be made more effective with the fitting of electronic support measures (ESM) and forward looking infra red sensors (FLIR). These systems will become operational at about the turn of the century and will greatly enhance

Seahawk surveillance capability. The ESM will include a missile approach warning system (MAWS), physical counter measures (chaff and flare) as well as a broadband ESM onboard analysis and recording capability. The Defence Science and Technology Organization (DSTO) has conducted extensive research into optimising FLIR operations for tropical conditions, which hopefully will benefit project and operational activities.

Very likely, a mid-life upgrade program will be needed for the Seahawk about 2002 or 2003, to address capability and supportability issues which are already becoming evident. Apart from a current system upgrade, possibly including an air to surface missile and dipping sonar, this clearly provides an opportunity significantly to enhance communications, incorporating a fleet wide, common, data link capability. There are also plans to fit ESM for self-protection of the Sea Kings, while they perform the utility transport role. This self-protection will include a missile approach warning system, radar and laser warning receivers and chaff and flare dispensers.

The next major development for the Fleet Air Arm will see the introduction of 14 intermediate sized aircraft for the ANZAC Class frigates. Studies have shown that the ships' surface surveillance capability will be increased by a factor of 10 with an effective helicopter, which becomes an extension of the ship's combat system and consequently a force multiplier. The request for tender (RFT) was recently issued and the main contenders for the new intermediate helicopter contract are the Westland Lynx, the Eurocopter Panther, the Kaman SH-2G Sea Sprite and the Sikorsky S-76N. [The Kaman SH-2G Seasprite was subsequently selected as the NIH.] The ANZAC ship helicopter is expected to enter service before the year 2000. Observing that the first two ANZACs are already at sea, the gap in capability will be filled by the Squirrel; testimony to the programming difficulties which face the ADF – and other regional defence forces. There is so much to be done, and limited funding with which to do it.

The primary roles of the new intermediate helicopter will be surface surveillance and ASUW, for which the aircraft will be fitted with radar, ASM, FLIR and an ESM capability, including chaff and flares. The NIH will be crewed by one pilot and one observer and will give the ANZAC frigates the ability to engage surface targets at extended ranges, using the NIH with its own ASM or for over the horizon targeting (OTHT). The helicopter will also have a limited ASW capability, as a torpedo carrying platform. Project 1427 will see the additional procurement of up to 13 NIH for the offshore patrol combatant (OPC). Timing of the introduction of these additional helicopters will be driven by the timing of the OPC program and its possible development as the Joint Patrol Vessel (JPV) with Malaysia. Hopefully, the Squirrel will not have to act as the interim OPC helicopter!

THE NATURE OF NAVAL AVIATION IN THE 21ST CENTURY

The earlier chapter by Rear Admiral Barrie has outlined the roles of the RAN and other navies in 21st century operations and has pointed to the most radical changes being likely to occur in C3I. This development is eagerly awaited by all in naval aviation, as a necessary next step in realising the full potential of the Seahawk and other, future embarked aircraft. The increasing emphasis on constabulary roles for navies suggests that the flexibility of organic naval airpower will be particularly useful. For example, boarding operations are hazardous in other than benign circumstances and helicopter insertion is becoming commonplace. The passenger carrying capacity of helicopters will be a consideration in future procurement decisions and more sophisticated armament may well be adapted from army battlefield helicopters, to replace the door-mounted general purpose machine gun.

The trend towards most warships having organic helicopters and the increasing number of shore based surveillance and airborne early warning and control (AEW&C) aircraft, are clearly leading to situations in which these assets will encounter each other in areas of significant interest. Consequently, the air combat capabilities of battlefield helicopters may well be translated to the maritime environment, especially as air-to-air missiles have a credible capability against surface targets. Already, counter and counter-counter measure systems are appearing in maritime aircraft and this trend will continue, along with the inherent obligation of air-to-air combat capable aircraft to be able to distinguish friend from foe.

This leads us back to a point made earlier by Admiral Barrie – the affordability of the sensors and weapons which technological advances are making practicable for smaller aircraft such as naval helicopters. The rate at which the trend to multi-role sophistication Is followed will be driven by the perception of need, modified by the size of defence budgets. Good intelligence will clearly be vital to the decision making process. Equally clearly, the rate of technological change is going to require a sea-change in procurement processes. No longer can navies afford project gestation periods which significantly exceed the product life cycle.

The principal advantage of organic air power is its availability to the commander when he needs it. Nevertheless, being there on board ship means little if the aircraft is unserviceable, the crew is exhausted, or if weather conditions preclude launch or recovery operations. Technological advances have significantly improved availability rates, but the maritime environment is harsh and minimum manning regimes are forcing navies to pursue even more reliable systems, with self-diagnosing built-in-test and repair by replacement philosophies. Although naval aviation assets will become more reactive, cued by wide

area surveillance systems, crewing arrangements will still have to cope with 24 hour operations in a variety of circumstances. The ability to conduct flying operations in adverse conditions, by day or night and for prolonged periods, will remain a prerequisite for success in naval aviation. This demands a considerable investment in ship-helicopter integration; rugged, properly marinized helicopters and capable recovery and deck-handling equipment, to prevent inadvertent losses of expensive aircraft.

The small number of aircraft available to individual services, or nations, will see increased emphasis on joint and combined operations. The exercises we conduct today as confidence building measures, will become even more important, as proving grounds for information systems connectivity. Much has been written and spoken recently about the prospects for increased naval cooperation in the region, with options ranging up to standing naval forces. The potential benefits of establishing an effective standing naval force would be worth the substantial effort. Interoperability requires far more than a technical or theoretical compatibility between systems. Mutually agreed doctrine and procedures must be used to allow the operators, the people in the system, to realise the full benefits of the technology. While the difficulties should not be ignored, the benefits which would flow from such close cooperation are immense.

RAN involvement in the 1991 Gulf conflict and with the multi-national interception force (MIF) enforcing UN sanctions against Iraq, has been instructive in respect of maintaining interoperability. Any significant contingency in the Asia-Pacific region will, most likely, see several countries cooperate to resolve the issue. Consequently, RAN units, including helicopters, must be able to communicate effectively with all participants. Another multilateral interoperability factor, unique to naval aviation, is cross-deck operation. To the maximum extent possible, the physical compatibility between various helicopters and the deck handling systems and crews of air capable ships must be established and exercised. Many readers will remember, some years ago, photographs of a USN SH-3 (Sea King) perched athwartships on a rather small Royal New Zealand Navy (RNZN) frigate flight deck and of an RN Sea Harrier sitting forlornly on a Spanish container ship; both after emergency landings. Where there is a will there is a way, and overwater aviators will always try to find a way to avoid swimming. Routine cross-deck operations bring about improved communications and procedural compatibility, as well as broadening options for the conduct of multilateral air operations and for handling emergency situations. This chapter will now examine some possible future developments in naval aviation.

FUTURE DEVELOPMENTS

Clearly, anti-submarine warfare will be a more prominent issue in the new century, as more submarines enter regional inventories. Improved submarine detection technology, such as low frequency active sonar, is likely to be incorporated in the S-70B-2 mid-life upgrade and in helicopters for future RAN surface combatants. If it proves necessary, however, the regeneration of the organisational and technical skills required to operate dipping sonar will be a time consuming process. Resource pressures dictated the decline of the capability, and the problems of resurrection which will face the Fleet Air Arm are similar to those of other regional defence forces, now developing their ASW capabilities.

Operational information systems (OIS) incorporating artificial intelligence, will be needed to assist naval aircrew to operate more effectively in high workload multi-threat environments. The technology is undoubtedly coming, but again funding constraints will impinge on when and how widespread this level of capability will be in naval aircraft.

The demise of manned aircraft has been forecast, prematurely, for many years. While UAVs do not yet have the capabilities or performance characteristics to replace manned helicopters at sea, the new century will most likely see them used at least for high risk surveillance and over the horizon targeting operations, complementing the manned aircraft fleet.

New capabilities are likely to evolve for airborne mine detection. With such systems, appropriately supported helicopters could clear mined waters faster than surface ships acting alone. Naturally, cooperative efforts would be most effective in this role.

New radar technologies, such as synthetic aperture (SAR) and inverted synthetic aperture (ISAR) are extending the stand-off range for positive identification and engagement of surface targets. This is another pointer to the need to extend the reach of ships' sensors and weapon systems, by arming organic helicopters. The USN cooperative engagement concept (CEC) technology development is resulting in systems weight, space and cost reducing to levels which may make it feasible for fitting to organic naval helicopters.

CONCLUSIONS

For naval aviation the implications are clear, whether we face evolution or revolution in military affairs. The maritime aircraft (fixed and rotary wing) of tomorrow will need to be more capable and highly flexible. Their air and maintenance crews will need to be multi-skilled. Command, control and communication systems will need easily to cross service and national boundaries.

Undoubtedly, technology will provide equipment to meet the challenges of the new century. In a world which will continue to change ever more rapidly, success will demand people and organisations geared to incorporate change. For navies in general, and naval aviation in particular, this will require constant practice in the forums of joint and combined multilateral exercises and other activities.

13 Maritime Air Operations – The RAAF Contribution

JOHN HARVEY

THIS chapter will address the future RAAF contribution to maritime air operations. In recognition of the need for joint action, but also taking advantage of specialist knowledge of different service providers, it will complement the chapter by Captain David Ramsay on the RAN contribution to maritime air operations.

ROLE OF AIRPOWER IN MARITIME OPERATIONS

Increasingly, the teeth of armed forces is provided by air power – regardless of which Service is the provider. Colonel Phil Meilinger, Dean of the USAF School of Advanced Air Power Studies, estimates that currently, 60 per cent or more of all defence funding in the United States is spent on air power (which includes space capabilities).[1] Certainly, the RAN is aware of the importance of air power, aiming to provide an air capability for each of its new ships as well as anti-air capabilities for self and fleet defence.

The RAAF contribution to maritime operations involves more than aircraft directly involved in anti-surface or anti-submarine operations. And as will be pointed out later, it certainly involves more than just aircraft. The RAAF recognises control of the air as the prime air campaign. Without control of the air, surface operations are either extremely difficult or impossible.

In the maritime environment, ever since the American airman Billy Mitchell demonstrated the use of aircraft to sink the former German dreadnought OSTFRIESLAND off the Norfolk Virginia coast in 1921, ships at sea without air cover have been at risk.[2] Surface ships, self-defence capabilities have clearly developed since that time, but so too have aircraft anti-ship capabilities.

The importance of the need to maintain control is well illustrated by a story which is said to be true. In the United States, shortly after the Gulf War and following all the publicity surrounding the success of air power, a school student was asked why the South had lost the Civil War. After thinking for a while the

student replied: 'Because they didn't have control of the air'. Perhaps not the right answer given the context, but the sentiment is appreciated!

It must also be remembered that it is not only through defensive counter-air actions in the area of maritime operations that control of the air is achieved. Offensive counter-air actions well away from the maritime battle may be the best way of influencing the battle's outcome. As well, maritime interdiction operations and strategic strikes against, for example, command and control centres can have a direct effect on the outcome of a maritime battle thousands of kilometres away.

The RAAF's land based aircraft clearly have range and endurance limits which affect their ability directly to carry out maritime operations. The completion of the chain of northern bases, however, will go a long way towards redressing this limitation in the direct defence of Australia. Additionally, ensuring that all maritime aircraft are air-to-air refuelling capable and acquiring an operational tanker capability, would significantly improve the RAAF's ability to contribute to maritime operations.

INFORMATION DOMINANCE

While the need for air control in the maritime context is now generally well accepted, and will continue to be a requirement, there is a need to look to the future and the changing nature of warfare. The end of the Cold War has coincided with what Alvin and Heidi Toffler have described as 'the Information Age'.[3] The use of terms such as 'information warfare', 'information dominance', 'knowledge based conflict' and 'dominant battlefield awareness' is becoming common.

'Information' in this context is used very broadly and applies to unclassified as well as classified data and the communication of those data. Dominance in what has been called the 'information dimension' helps remove the 'fog of war'. And, just as control of the air allows freedom of action on the surface, control of information will become increasingly necessary for freedom of action in all three dimensions. In recognition of the importance of information dominance, the USAF has called for a fundamental re-examination of its doctrine:

> Just as the US Air Force strives to dominate the skies over a battlefield, the Service is now taking steps to dominate the exchange of information in future conflicts.[4]

Even small forces, such as the ADF, must acknowledge the need for information dominance in any future conflict. While the ADF in general, and the RAAF in particular, have yet explicitly to adopt a doctrine including information dominance, implicit recognition of the importance of information can already be seen in terms of the Defence capital investment program.

INFORMATION: THE TRADE-OFF BETWEEN INFORMATION CAPABILITY AND FORCE CAPABILITY

In choosing an appropriate force structure for the ADF, there is a trade-off between what can be described as 'information' capabilities and 'force' capabilities. At one end of the spectrum, there is full information about enemy force dispositions, activities and, ideally, intentions; which would therefore require a lesser force capability to deal with him. At the other end of the spectrum, if there is little or no information about the enemy, very high levels of combat forces would be required. This can be seen as extending the concept of using precision weapons – where application of a small amount of force to the right target, in the right place, avoids the need to apply large amounts of poorly directed force.

The point can be illustrated by using the case of Australia's strategy of denying its air and sea approaches-based largely on advanced air and sea platforms. Consider a large scale anti-surface action in which, for argumentis sake, a total of 50 Harpoon missiles is fired from a variety of air, surface and sub-surface platforms. While this clearly represents a formidable anti-ship capability, the total amount of 'force' applied, that is in terms of high explosive, is only equal to one F-111 loaded with 'dumb' bombs.[5] There is also a huge difference in cost-about $2 million for a Harpoon, versus about $2,000 for one 500 pound bomb; a ratio of 1,000:1. Clearly, precision comes at a price!

Similarly, in the air control role, a defensive operation involving the use of, say, 50 AIM-7 Sparrows, is equal to only half the same F-111 load. It is information, in this case precise knowledge of the enemyís location, that allows a small amount of force to have a disproportionate effect. The key question for Australia then is one of balance-achieving the most effective mix of 'information' capabilities (in which is included surveillance, intelligence and command, control and communications) and 'force' capabilities.

SURVEILLANCE

For some time, the ADF has recognised that its ability to control its air and sea approaches will depend on information: that is the need for wide area surveillance. The RAAF's ability to contribute to the wide area surveillance capability will be considerably improved in the future; primarily through the Jindalee Operational Radar Network (JORN); airborne early warning and control (AEW&C) aircraft; and the upgraded P-3C Orion aircraft.

JORN

The capability provided by JORN will represent a quantum leap over existing surveillance methods. For the first time, the ADF will have near continuous, real time, high quality data covering its area of prime strategic interest. JORN is expected to be in service in about 2000, at a total project cost of approximately one billion dollars. The JORN radars can detect air and surface targets at ranges of between 1000 and 3000 km – representing a total area of coverage of some 20 million square kilometres. As well as detecting aircraft and ships in Australia's area of primary strategic interest, JORN will also provide a range of information contributing to Australiaís broader security interests. This includes meteorological data on surface winds and sea wave heights, early warning weather alerts and cyclone tracking. As the system comes into service new uses for it are also likely to be discovered.

Initially, JORN will consist of one transmitter-receiver radar located at Longreach in Queensland, a second near Laverton in Western Australia, and the JORN Coordination Centre (JCC) at RAAF Base Edinburgh in South Australia. The experimental radar at Alice Springs will be converted to a research and development role. A decision on a possible third operational radar will be made after approximately two years of operation.

Correlated tracks from the JCC will be transmitted to the sensor coordination centre at No 2 Control and Reporting Unit (CRU) at RAAF Tindal, where value adding in the form of identification and/or merging with microwave tracks will be carried out. The JORN tracks, together with all other air tracks, will then be forwarded to the National Air Defence Operations Centre (NADOC) as the recognised air picture, and to the Maritime Intelligence Centre (MIC) where it will be fused with data from other sources to form the recognised surface picture.

Targets will be processed by Air and Maritime Command systems and relevant information will be passed on to other Government agencies. Essential to the effective operation of JORN is an effective and survivable communications system. (Even an information system, therefore, depends on information). Detailed command and control arrangements for JORN are yet to be finalised, but JORN will be a national asset under the operational and administrative command of Air Commander Australia. Overall tasking priorities will be set by the Chief of the Defence Force (CDF). A total of about 145 service personnel will operate the system, with civilian contractor personnel maintaining the remote radar sites.

AIRBORNE EARLY WARNING AND CONTROL

While broad area surveillance of the northern approaches will be carried out primarily by JORN, its technology does not allow close control for the intercept and neutralise task. Another key element of the ADF's surveillance capability will therefore be the introduction of AEW&C aircraft. Acquisition of an AEW&C capability has been proposed and studied by the ADF almost since such a capability first existed. While a financial commitment has yet to be made, the project is progressing well and the first aircraft is expected to be in service around the year 2000.

While AEW&C is generally synonymous with a radar capability, multiple sensor AEW&C is now recognised as the preferred option. Multiple sensors provide greater capacity for detection, and identification and reduce the chance of the surveillance capability being defeated.

While AEW&C is being acquired to meet the air defence strategic concept, it has great potential to contribute to many other roles and tasks, including: command, control and communications, protection of the fleet, and general anti-surface operations. Compatibility with surface and sub-surface units will therefore be essential.

P-3C ORIONS

The RAAF's P-3C Orion Long Range Maritime Patrol (LRMP) aircraft represent a very significant part of the ADF maritime surveillance and combat capability for response to surface and sub-surface threats. Consistently with the emphasis on information warfare, two major upgrades of the RAAF's P-3 aircraft are underway or about to commence. The first is the P-3C Update II which consists of fitting advanced Electronic Support Measures. The upgrade is expected to be finished by the end of 1996.

The second and larger project, is the upgrade that will extend the operational life of type of the P-3 fleet to beyond 2015. The upgrade includes replacement of the radar, acoustics, navigation and communications systems, magnetic anomaly detector (MAD) and the data management system. A key part of the upgrade will be the new radar, which will provide 360 degree coverage, long-range surface surveillance, moving-target-indicator, track-while-scan, advanced electronic counter-counter measures (ECCM) and imaging capabilities to assist identification (including SAR, ISAR and range profiling). The upgraded aircraft will start to be delivered in 1998, with the fleet upgrade to be complete in 2001.

While these capability improvements will improve performance in current P-3 operations, the upgrades are so substantial that a fundamental rethink of

P-3 roles and the means of carrying them out may be needed. Part of this rethink must involve determining how to integrate P-3 operations into the full range of ADF maritime capabilities. In terms of surveillance, this means integrating with JORN, AEW&C, surface ships and submarines. In the attack role, it involves integrating with F-111s and F/A-18s as well as surface ships and submarines. With the new capabilities, the P-3s could possibly change from a primarily patrol role to more of a ready response role-providing high resolution information based on JORN cuing. Because the upgraded aircraft will be able to classify at long range, tactics may also need to be revised to reflect a new means of engagement and targeting.

FORCE CAPABILITY

RAAF assets available for controlling the air and sea approaches are the F/A-18, F-111 and P-3Cs. The F-111 and P-3 aircraft are undergoing extensive upgrade projects and a major upgrade for the F-18 is planned.

F/A-18

The F/A-18s are true multi-role aircraft and provide air control, maritime and land attack and reconnaissance capabilities. A future upgrade will concentrate primarily in the 'information' field; particularly involving the radar and mission computer. Weapons upgrades will concentrate on the air control role; with a beyond visual range missile which will allow 'launch and leave' and a more agile within visual range missile, probably targeted with a helmet mounted sight.

F-111

The F-111 performs several roles, including maritime strike, air control and reconnaissance. The F-111 Avionics Update Project also concentrates on the 'information' elements of capability, with a complete replacement of sensors, communications and mission computers. Weapons upgrades are also planned. While the current Harpoon missile provides a very effective anti-ship capability, it does not allow precise targeting and therefore has limited utility where rules of engagement are very restrictive. Acquisition of weapons with an imaging IR capability is being considered, to redress this deficiency.

An anti-radiation missile will also be acquired to increase both aircraft survivability and to expand the Government's options in response to a maritime threat-providing the option of damaging rather than sinking a ship. At the lower

end of the threat spectrum, advanced laser guided bombs (LGB) will be acquired to provide a cost-effective means of attacking less capable ships.

P-3C ORION

As discussed earlier, the major upgrades to P-3s will be in the information field. As for the F-111, however, an anti-radiation missile (ARM) will be acquired, to increase response options while at the same time increasing aircraft survivability.

COMMAND AND CONTROL

Maximum effectiveness of ADF information and force capabilities can only be achieved when they are integrated into a comprehensive air and surface defence system. An essential part of this will be an effective command and control system which requires extensive secure, jam-resistant and broad-band communications capabilities.

One of the outcomes of recent technological developments, particularly in computers, has been the dramatic improvement (or at least the potential for it) in command and control. The RAAF's operational headquarters, Air Command, now recognises effective command and control as a capability in its own right. The RAAF is undertaking major developments in terms of C2, to accommodate the increased range of information available and the ability of new technology to 'fuse' data effectively and to control forces. Considerable effort is being made to develop a joint operational level command and control capability – something which the ADF has been lacking. A significant impact on C2 will be the development of the co-located Joint Force Headquarters which is now underway.

FUTURE DEVELOPMENTS

Looking further to the future, key developments are also likely to occur in the information aspects of maritime warfare. While space-based navigation and communications have been used by the ADF for some time, the use of space based sensors for surveillance and reconnaissance is now being considered. There is also considerable interest in the use of unmanned aerial vehicles. Both the RAN and Australian Army are investigating shorter range UAVs for reconnaissance purposes. The RAAF must investigate the use of long range, long endurance systems now being developed. In this sense, long endurance refers to systems with endurance in the order of three months. These systems are not excessively complex and could be operated and perhaps even built, by Australian industry; thereby contributing to Australia's quest for defence self-reliance. UAVs with the ability to launch smart weapons, further reducing the risk to aircrew, are also being investigated.

CONCLUSION

In concluding this rather brief overview of the RAAF contribution to maritime air operations beyond the year 2000, there is a need to re-emphasise the continuing need for air control and, increasingly, the need for information control. An essential element of this information control will be advanced surveillance systems, to provide 'dominant situational awareness'. Information will prove to be the most effective force multiplier.

While the need for information dominance has yet to be explicitly identified by the ADF, investment figures show that money is already going in that direction. Using very rough estimates, and looking only at RAAF systems discussed earlier, total investment in what can be called the 'information component' of combat capability is approximately $4 billion, whereas direct investment in the 'force component' is only approximately $200 million-a ratio in favour of information systems of about 20:1. The revolutionary changes in capability provided by ongoing or planned developments, will require a fundamental rethink of how the RAAF, and the ADF generally, carry out their existing roles. Fundamental to this will be effective command, control and communications systems which effectively integrate the wide range of advanced capabilities available to the ADF.

These changes are fundamental to what some are calling a revolution in military affairs (RMA). As Mazzar has observed, however:

> Technologies may drive the RMA, but people and organizations will carry it out. In addition to smart weapons, therefore, the RMA calls for smart organisations and smart personnel.[6]

The point to note, then, is that new capabilities will only be as good as the people operating and supporting them.

Notes

1. Based on personal discussions with Colonel Meilinger.
2. Alan Stephens, 'Aerospace Strategy', in *Australian Defence Force Journal*, No. 98, January/ February 1993, p. 27.
3. Alvin and Heidi Toffler, *War and Anti-War: Survival at the Dawn of the 21st Century*, Boston: Little Brown and Co., 1993, pp. 15-17.
4. Pat Cooper and Frank Oliveri, 'Air Force Carves Operational Edge in Info Warfare', *Defense News*, August 21-27, p. 29.
5. This comparison is based on the original F-111C load of 48 Mk 82 500lb bombs. The explosive content of a Mk 82 and the AGM-84 Harpoon are about equal.
6. Mazarr, 1994.

14 Operational and Technological Developments in Underwater Warfare

NORMAN FRIEDMAN

IT may not be necessary to repeat that submarines are a very nasty proposition, not least because their weapons are more lethal than anti-ship missiles. Of interest, historically, in the United States and virtually everywhere, when people think of anti-ship threats, they usually do not think of anything from underneath. So everyone will say, 'Exocet'. But you never hear someone say, '53/83 torpedo'. Part of the reason for that was the secrecy associated with the other side's torpedoes during the Cold War. For example, not only were their names secret, but we invented their names to look like Russian ones. And even the invented names were not mentioned; whereas the invented names for the missiles were all very well known.

> What was your nightmare last night?
> An AS4 hit me. Not, a 65/76 torpedo got me.

Additionally, it is very difficult to counter torpedoes. But, there is a problem in everything we do. An example lies in what used to be called bomb damage assessment, but is now called battle damage assessment (BDA). When dealing with an incoming weapon or when trying to destroy something, it is not easy to determine how successful you have been. The problem exists not only in relation to strikes, but also in how to deal with torpedoes. Even though they are not difficult to track, (despite earlier false alarm problems) there is a real problem in determining whether you have successfully engaged incoming weapons. There is also the more fundamental problem of actually destroying them.

COUNTERING THE TORPEDO

Underwater warfare in general is a warfare of darkness. Because you cannot see, there is, therefore, a high false alarm rate, and difficulties in classifying the target. Furthermore, there is a general perception that submarines are a very dangerous

threat and that there will be more of them in future. Shallow water also complicates the problem, together with unfavourable water conditions for sound propagation. In all, the submariner's lot can seem a much happier one than your own.

Consequently, there will be a clear need to be able to counter incoming torpedoes. Remarkably, up to now, much of the thought about that centred on decoys – or soft kill. Noting the earlier comments about BDA, one of the problems with soft kill (applicable to missiles as well as torpedoes) is knowing that you have succeeded. For example, most of the available jammers, say range gauge stealers, appear to be fine in theory. Nevertheless, often the only indication of success is that you are not hit – too late to have exercised any options.

If finding submarines will continue to prove to be difficult, then some kind of hard kill anti-torpedo weapons will be necessary. No such system is known to be operational. The Russians claimed to have the capability but their claims have not been substantiated. The USN has tried to develop it, but without success yet. It does seem to belong to the 'too hard' category; something to be brought on by the research and development (R&D) organisation, later.

If you do not have a lot of ships, losing one is an expensive proposition. Still, surface ships can be designed and built large enough to survive an under the hull hit. The key is to put more strength into the sides of the ship. Doing that provides another reason for building them big. Small ships will not handle the problem.

THE SUBMARINE – PROS AND CONS

On the other hand, submarines have limitations too, some of which seem to be more or less permanent. Probably the most significant and permanent limitation is the number of weapon slots, because of the submarine's limited internal volume. If you decide to use diesel and electric motors of a reasonable size, the submarine will not be very big, and if it is planned to be, the expense will be untenable. So there are unlikely to be many more than 20 weapons. If vertical launchers are proposed, as the Russians offer on the advanced Kilo, up to four more weapons could be provided. Consequently, there has to be some intelligent thinking about weapons selection and submarine tasking.

Over time, there have been many ideas relating to submarine weapons outfits. First it was just torpedoes, with subsequent disagreement over single purpose or dual purpose variants. Clearly, dual purpose torpedoes come with a higher cost. Later, submarine launched missiles appeared, together with the question of what organic targeting would be available to the submarine prior to missile launch. If there is to be a concentration on towed arrays, something like a Harpoon missile

is about the limit of what can organically be targeted. If inorganic (or third party) targeting is feasible, then the question is one of how well the submarine can receive the targeting data.

With a land attack missile, the issue is going to be how much targeting information can be input, with a consequent reliance on high capacity satellite communications – possibly even commercial type television channels. If the targets are surface ships, there must be some way of picking up the same ship picture available to other units. That implies the need for fairly large work stations. None of this is impossible, but it has to be done.

An interesting possibility for modern submarine command systems is that, if they are based on general purpose computers, then functions can be changed in the event of unserviceability or different demands. So if a submarine's task is surveillance, then specialised analytical consoles may be needed. Previously, these consoles would have been hard wired. This is no longer necessarily the case, which means, significantly, that a submarine can switch roles more easily. Another sensor which might be put in the torpedo tubes is an unmanned underwater vehicle (UUV). If the task of the submarine is electronic surveillance, then the submarine commanding officer (CO) would not want to have to loiter around somebody else's port with a wire exposed above the surface. The ability to lay an array with a buoy, from which the wire would be exposed and which could be monitored by the submarine from, say, 20 miles away, would be very attractive. This concept is very much within the capacity of current technology.

Similarly, if you are worried about a defensive mine field, then a UUV might provide an extremely useful form of covert reconnaissance. The particular value of covert reconnaissance is the retention of surprise. The real issue is not whether the opponent can prevent your surveillance effort, but that detecting your presence denies you the element of surprise and carries the potential for retaliation by the opponent. This was a major concern to the Royal Navy after the Falklands War and very reasonably so.

Another vulnerability related issue is that if there were only one submarine in the world it would have to worry only about surface ships; a threat which any submariner would consider manageable. But, if there are many submarines, threats can also come from enemy submarines, or even from your own. Consequently, submarines have to maintain a much more precise tactical picture than might commonly be expected. The need for automatic evasion might also emerge where threats manifest themselves unexpectedly. So, perhaps the submarine combat system should have something in common with an aircraft manoeuvring system rather than what we are used to. Now, this is a serious issue, because if the system manoeuvres the submarine downwards into the path of a torpedo, evasion will become the least of one's problems. The Collins Class submarine is suffi-

ciently capacious for some combat system development along this line to be feasible. Nevertheless, no submarines are so equipped at present, even though the Russians have made some attempts.

There has also been much discussion and some development of air independent propulsion – a much over-rated issue. In an area which is infested with patrol aircraft and bottom sensors, for example, snorkelling by a submarine could be fatal. But in Asia-Pacific, patrol aircraft are not at all so plentiful. Furthermore, the world is filled with diesel powered ships. So, when a submarine run its diesel, there is a good chance that it will sound, like a trawler or a small freighter. In fact, there may be an argument for surfacing rather than snorkelling to recharge batteries, particularly if it can be done quickly. The Russians have certainly considered this, as a glance at the Kilo Class submarine suggests. Frequently, Kilos carry anti-aircraft missiles on the sail. They cannot be fired when the submarines are submerged, but only when on the surface. Furthermore, a lot of ASW torpedoes are not effective on the surface. So there is some advantage to be had in using the surface more.

So, what does AIP provide? It buys the submarine the ability to avoid having to snorkel for up to about two weeks. Clearly, that is very good, but what does this additional freedom cost? Firstly, it is an extra system built into the submarine, and possibly not shock-hardened. Secondly, it usually involves fairly noxious chemicals. And both of these issues could be significant weaknesses. So, there is some reason to be a little sceptical about AIP. Furthermore, the operation of the air independent propulsion system may not itself be as silent as necessary.

When they are running, submarines do produce noise, often identified as a propeller blade rate by passive sonic sensors. Contemporary submarines, through quietening processes, are difficult to detect in this way, unless the opponent has a sufficiently low frequency sensor. Such technology relies on substantial investment, so if potential opponents have not made such investments, you will need to consider the value in additional quietening processes. This would be especially the case if your submarines are already especially quiet. So there must be a question as to whether AIP is really necessary, or is merely a fad. Perhaps it is a case of being the first in your region to have fuel cell! The money would be better spent on weapons, or on a good combat system.

Assuming that your submarines can be detected, evasion would be a key factor in survival. AIP, however, as currently available is not capable of generating high speed for evasion: it is a low speed system. So, survivability will still depend on how much battery power remains. If, however, AIP gave say 20 knots for 20 minutes, then it would be a reasonable proposition. But it cannot do this at present and there have been very few sales to submarine operators.

You can also take action to reduce submarine exposure by using optronic

equipment, which, presumably, will be fitted to the Collins Class. You can raise a mast, have it take a photograph, bring it down and examine the photograph at leisure. This will eliminate the current practice of the commanding officer raising the periscope for a brief exposure, quickly examining the scene, all round, and having to form a picture in his head of that scene. This difficult procedure can be eliminated, thereby reducing the exposure risk and making tactical picture compilation more effective.

Then, there are other weapons which can be used by the submarine, including the Tomahawk land attack missile, in which the Royal Australian Navy and the RN are interested. A point worth noting about this is that if these weapons are purchased and used for leverage, the fact that only a few of them are carried does not much matter. They produce a useful effect if they are properly targeted. The destructive effect can be enormous. For example, you can blow up an air defence system.

Incidentally, in that sense, the RAN should not have lost its aircraft carrier! There can be substantial leverage gained from a small number of aircraft, through the demolition of an air defence radar headquarters, for example. In many cases, one or two missiles will do the job and the advantage of firing them from a submarine is the platform's relative invisibility. Similarly, the target will have no forewarning of the likely direction of attack. If the missiles are fired from a surface ship, perhaps in company, the enemy will probably have a reasonable idea of their source. The missiles are 'low observable' but they are not invisible. But, even though the submarine can offer a lot in this respect it is by no means the complete answer. Consequently, talk of submarines using Tomahawk for strategic strike sometimes ignores the fact that 500 or 1000 pounds of high explosive is just not a megaton.

MINE WARFARE

Turning now to the matter of mines, something rather unpleasant has happened. At one time the mine inventory of the average country might include, say, 8000 mines, of which some 10 per cent would be influence mines. Most of them would have been old moored mines, which could have been swept relatively easily. Then destructors were (unfortunately) invented for the Vietnam War. Destructors are mine attachments which can be added to Mark 80 series bombs. They are easily stockpiled and unfortunately, many people also buy bombs. The consequence is that the numbers of mines you may have to counter could be much higher than previously expected. Admittedly, these converted bombs do not make really good defensive minefields, but with effort they could be laid defensively. Clearly, you

would not want an opponent to know that you know where he has laid the mines. The 1991 Persian Gulf War provided a very interesting and unpleasant lesson in this respect.

The Iraqis laid mines virtually under the noses of the coalition forces, who literally watched them doing it. Unfortunately for the coalition, the Iraqis did not have enough mine laying capacity. So, when they laid them from the two T43s Russian built minesweepers/layers the activity was noticed and the minefields were mapped out. But, because of the lack of laying capacity, mines were also laid from landing craft and cabin cruisers and every other vessel that could be pressed into service. The coalition forces mistook this activity for logistics support, perhaps leaving Kuwait. So, when the USS TRIPOLI and USS PRINCETON were mined, there was a claim that they had been mined in swept waters. In fact they had been mined in waters which the coalition thought were clear.

If it is difficult to clear minefields quickly, then a lot of effort goes into minefield reconnaissance and it becomes terribly important to know what to worry about. On the one hand, no opponent is likely to have enough mines to meet all his needs, but on the other hand you will need to be able to determine when extemporised craft are being used as minelayers – a very difficult problem. We tend to think of mine countermeasures in terms of support for amphibious operations. Consequently, another significant problem is to determine how to conduct a landing in the face of a mining threat, and without giving the opponent much warning. Among the challenges associated with such operations will be determination of the composition of the minefield; very quickly and preferably covertly. Similarly, fast mine clearance will also be desired. With current mine hunting technology (and the RAN's Huon Class is as good as anything) the mine hunter has to detect, stop, examine, neutralise and go on. Consequently, a lot of the money spent on mine hunters is for the combat system. There is a definite need to know whether mines have been neutralised, not least so as to avoid the next mine hunter having to deal with them.

Quick breaching systems are also of interest closer to the shore, where very densely laid mines, like anti-personnel mines and anti-tank mines, become a threat. Naval mines might be bought by the hundreds, but anti-tank mines are bought by the tens of thousands. So, what is needed is some kind of breaching mechanism. Explosive breaching is an option, one being explored by the USN now. An advantage of this method is that it is very positive and it can be very fast. The disadvantage is the difficulty in knowing how close the explosive needs to be to blow the mines. The USN is also very interested in line charges and explosive nets, which apparently do work. If amphibious landings are an issue you may have to face opposition of some kind and of varying severity. Very likely, some of this opposition would emerge in the form of mines.

SUBMARINE OPERATIONS

Any examination of underwater weapons will most likely identify submarines as valuable resources. Nevertheless, they will normally not carry many weapons, especially if they also carry UUVs, and so are most likely to be used as very mobile sensor platforms. In our very uncertain world covert sensor platforms are extremely valuable. Aircraft and satellites are also very valuable in this role but, the victims can usually detect surveillance aircraft and can determine when satellites are due to pass overhead and can adjust activities accordingly. In such circumstances, the covertness of submarines really pays off. This will probably always be the case; thereby making platforms like the Collins Class especially valuable.

Hunting down opponents' submarines is probably best done with a mixture of escort, where you wait for the opponent to make a move, as well as loitering off his ports, watching him come out at high speed and then attacking him. But, if you can force him to come out slowly and very silently, you can take advantage of the fact that diesel powered submarines are not particularly comfortable and do have a finite endurance. A final point on submarines is to consider who operates them, and just how good they are. On the latter point, it is very hard to tell: certainly there seems to be no credible account of which submarine services are good and which ones are not. Thought will also have to be given to predicting which countries will buy submarines, how many and what kinds. Interestingly, from the point of view of terrorising the opposition, almost any submarine is probably as good as any other, since it may never be seen outside the pages of a reference book.

This factor will also influence how seriously submarines should be taken as threats; which in turn will depend on how long it takes to develop an effective submarine service. If the answer is something like 15 years from time of purchase and the potential opponents have not yet bought, then you do not have a problem for the next 20 years. Such a situation will allow a cut in your cost for immediate ASW capability and allow funds to be diverted into R&D on say, anti torpedo measures, or even purchase of an aircraft carrier! If, on the other hand, your potential opponents can be trained up within about three to five years, the problem becomes much more immediate.

An associated issue is that Russia could be a ready source of surplus submarine officers and crew. Could they become a means for other countries suddenly to get real submarine forces? Further, as far as torpedoes are concerned, Kilo Class submarines come with wake followers and all Russian anti-ship torpedoes are wire-guided homing torpedoes and apparently are wake followers. That is not great news for surface ships! On the other hand, Russian torpedoes do not fit in the submarines of other countries – they are too long. Probably the only other

wake homing torpedoes available are French ones which have not enjoyed significant sales. There may also be a German version. This suggests that although wake homing torpedoes are a significant threat, they are not yet widely available.

CONCLUSION

Clearly then, diesel powered submarines have both capabilities and limitations. For example, despite their evident strengths, they have very limited underwater speed for any length of time. When you think of 20 knots, remember that it is possible only for a little while. Most often the speed is more like three, or four, or six knots. Consequently, mobility is quite limited. Then, if you decide to buy nuclear submarines there are very substantial financial and other implications. The other alternative is AIP, which allows you to loiter a lot longer, but if no one is hunting while you are loitering, why go through the misery? For it to be worth while you must be faced with an operating environment in which there are elaborate underwater detection systems which hunt you constantly, or in which any 'indiscretions' are liable to detection by patrol aircraft. This region does not present such a threat to submarine operations. The absence of continuous surveillance allows diesel submarines to operate on the surface. This may demand considerable courage, but that is a prerequisite for submarine service.

15 Mine Warfare Operations in Tomorrow's Asia-Pacific

HECTOR DONOHUE

INTRODUCTION

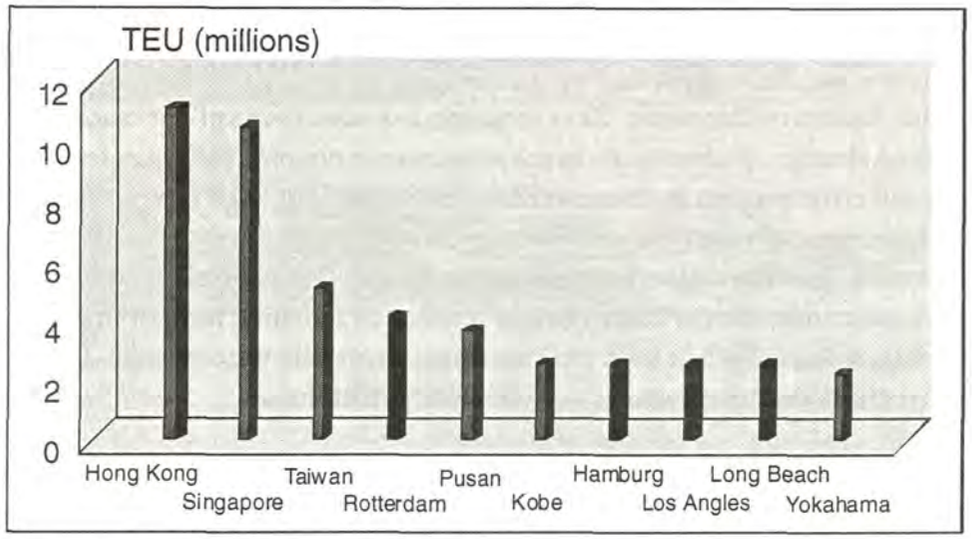
Well over 90% of the world's trade and transport of strategic materials is by sea, involving some 80,000 maritime vessels. Southeast Asia makes an important contribution to world trade, and in part, this flows from its strategic location on the cross roads between the Indian and Pacific Oceans, and between the oil rich Middle East and the markets of Japan and North America. Asia-Pacific international trade is growing at a rate faster than that of any other region of the world. In 1990, East Asia's international trade had surpassed that of North America. Moreover, by the year 2000, this group is projected to be close to surpassing Western Europe as the region generating the highest percentage of world trade.

A primary consequence is that, because nearly all of this trade is carried by ship, the growth of shipping tonnages and container loads (TEUs) in the Asia-Pacific has been similarly rapid. Figure 1 shows that in 1994, five of the six busiest container ports in the world were located in the Asia-Pacific region. The spectacular rates of growth in container traffic experienced by some of the Asia-Pacific's leading ports is illustrated in figure 2. Projected growth rates for container traffic to 1997 show Southeast Asian ports expanding at more than nine per cent annually – the most rapid rate in the world.

The speed and sheer size of this region's economic growth, the rapid rise of the regional countries' economic interdependence and the concentration of those linkages in vast volumes of sea traffic, highlight the critical importance of shipping to this region. Shipping routes are sometimes rightly described as the arteries of the regional economy. In the Asia-Pacific an uninterrupted flow of shipping is critical to most regional countries' economic health and prosperity, and to some countries' very survival. The security of this shipping is, therefore, an important and increasingly critical strategic factor in this region.

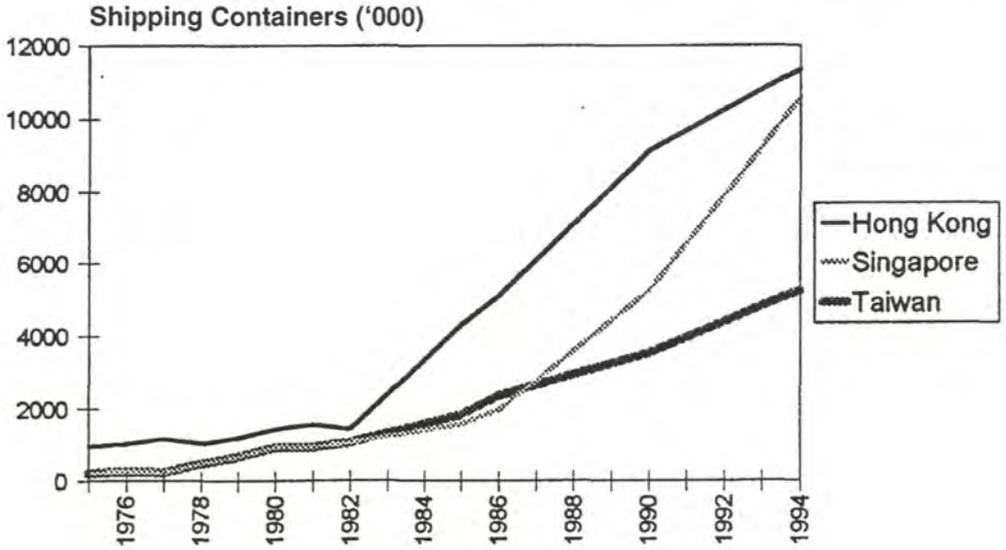
Any future military crisis will almost inevitably involve maritime operations, including the protection of sea lines of communications, the deployment of task forces, the transport of troops and heavy lift and, possibly amphibious operations.

Figure 1: Ten Busiest Container Ports 1996 (TEU)



Source: Containerisation International, Vol 28 No. 1, January 1995

Figure 2: Container Traffic Growth in Selected Asian Ports 1975 – 1994



Source: Containerisation International, Vol 28 No. 1, January 1995

These operations will involve forces being deployed in what is often termed littoral warfare as is emphasised, for example, in the latest US Navy strategy 'Forward from the Sea'. It is within such scenarios that naval forces are most vulnerable. Apart from the potential for land based air attack, the shallow water littoral region is dominated by the threat posed by the quiet conventional submarine and the weapon that waits – the mine.

The Exclusive Economic Zone concept has also changed the nature of maritime strategy. Nations now have an imperative not only for the defence of ports and coastlines but in the surveillance and control of fixed assets offshore, such as oil rigs, as well as the dynamic resources within their economic zones, such as fisheries. Another major factor relating to today's international environment is that operations, such as United nations sponsored activities, have an emphasis on safety, as loss of life in such contingencies is generally unacceptable. Under these regimes the mine assumes an even more potent threat.

MINE THREAT

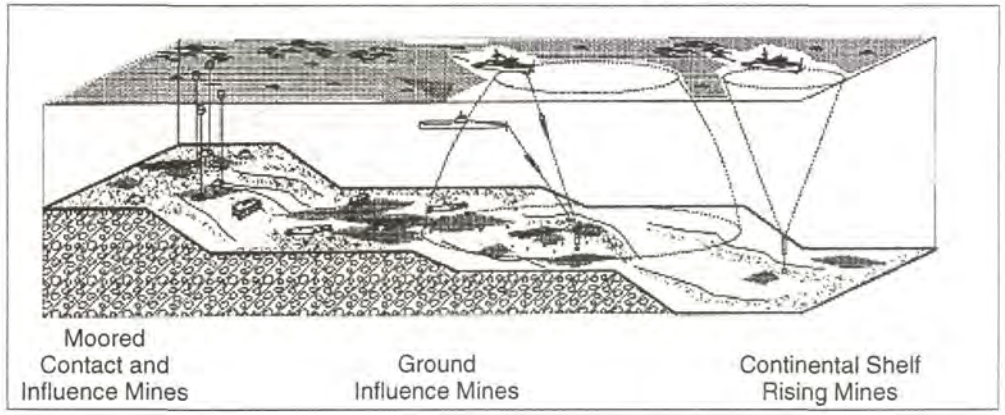
Analysis of past mining operations shows that mines are extremely cost-effective weapons. The use of mines in international waterways, particularly because of their indiscriminate nature, risks causing damage to third party shipping and bringing international condemnation, although collateral damage can be reduced if the minefield is declared. Many recent examples of mining have been of a disavowable and covert nature, which has made the use of mines an attractive option, especially at the lower level of the conflict spectrum.

Whether moored, buried, deployed on the sea bed, or just drifting, mines remain amongst the most lethal and disruptive of weapons. Lethal because they are most efficient in terms of the explosive power relative to their size, and disruptive because even the threat of them being laid can cause a disproportionate response. The difficulty of finding mines, combined with their devastating effect produces a psychological reaction which enhances their overall effectiveness. Mines have also been used as a terrorist weapon.

The large range of mines suitable for different environments and scenarios, both offensive and defensive, available today is illustrated in figure 3. The simplest moored mines have not changed significantly over two World Wars and their sensors have had only a limited update. However, they remain potent weapons. Although mines have been sometimes regarded as relatively low technology weapons, this must be seen in context. Developments in the knowledge of the underwater environment, computer processing, sonar and in the design of advanced autonomous torpedoes are having profound effects on the design and effectiveness of ground and independent mines. However, even

simple, improvised mines as used in Vietnam in the 1970s, require a disproportionate effort to clear.

Figure 3: Current Mine Types



The modern mine sensor is an integrated system comprising the basic sensor elements and the associated signal processing function. Not only has solid state circuitry and micro miniaturisation enabled complex processing to be undertaken, but the low power requirement have resulted in a major increase in the mine's active life. Modern technology also enables mass production of mine sensors to be easily undertaken.

These developments increase the range and depth of operation of mines as well as target selectivity and discrimination, which results in greater resistance to traditional minesweeping techniques. Sensor developments for example enable the mine to detect minehunting operations and subsequently target the Mine Disposal Vehicle (MDV). Given the relative cost between a mine and the MDV of say, 1:10, such an exchange rate is in the miner's favour. An attrition rate of even one vehicle per five mines could not be sustained for long by a mine countermeasures (MCM) force.

Although such advanced systems are more expensive to manufacture, the lengthy active life and sensor analytical capability, makes them an extremely cost effective weapon. Advances in munitions technology, involving insensitive explosives, has not only made mines less susceptible to countermining, but has resulted in a significantly greater energy per kilogram of explosive.

Apart from the technological advances in mine sensors and explosives, other developments aim to prevent detection by minehunting sensors. These include self burying, low target strength and mines of unusual shape which quickly become encrusted with marine growth which acts as an effective camouflage. Additionally, cheap, concrete filled dummy mines or decoy mines laid in large numbers, interspersed with a few genuine weapons, increases the minehunting

clearance task significantly. Some mines are designed to have a degree of self mobility. The Swedish Rockan mine, for example, is hydrodynamically designed to travel horizontally as it sinks through the water. This means that such mines do not end up in a neat 'mine line' which could easily be identified by minehunters.

In mine warfare, the minefield should be considered the weapon, not the individual mine. In fact, minefields will often contain at least two types of mine to complicate the mine countermeasures effort. All these factors tend to make mine clearance operations even more protracted and difficult. They also emphasise the need for a balanced and versatile mine countermeasures force structure including both minehunting and minesweeping.

MCM FORCE STRUCTURES

The current MCM force structures in the region have tended to follow orthodox patterns with the emphasis on conventional minehunting and traditional minesweeping techniques. As the threat has become more complex so the techniques available to counter the mine have become more diverse and this will be reflected in the region's force structure into the next century.

Dedicated mine countermeasures vessels are designed to have low magnetic and acoustic signatures, and high resistance to shock. Most mine countermeasure vessel designs now use one of the fibre composite construction techniques available. The majority of designs utilise conventional hull forms, although the Royal Norwegian Navy has recently introduced a surface effect ship design, suited to their environment. The major disadvantage with the purpose built MCM vessel is the high cost of the platform, which invariably limits the size of the force structure and hence, the versatility of the available capability. Recent mine countermeasures developments aim to reduce the need for dedicated and high cost MCM vessels.

An example is the permanent magnet minesweeping concept, the Dyad Influence Sweep, in service in the Royal Australian Navy (RAN). These sweeps do not require power and hence, has allowed the introduction of converted fishing boats or auxiliary minesweepers into the RAN force structure. The force structure is based on having two small auxiliary minesweepers and two large auxiliary minesweepers, supported by a reserve of sweep systems for installation in commercial craft in the area of operations. This low cost system was introduced in parallel with new minehunters, allowing a balanced mine countermeasures force structure to be developed. The RAN recently increased the number of sweeps in its inventory to provide for a strategic reserve.

Developments in minesweeping have tended to be overshadowed by the

greater number of research and development programs relating to minehunting. As minesweeping was the first technique developed to counter the mine, developments in this area will be reviewed, before describing the advances made with minehunting techniques.

MINESWEEPING

Minesweeping techniques use either influence or mechanical (wire) sweeps normally towed behind the minesweeper. Influence sweeps are designed to simulate a ship's magnetic and acoustic signature in order to explode the mine, whereas mechanical sweeps are designed to cut the mooring cables of buoyant or moored mines, the resultant floating mine then being disposed of by divers or sunk by gunfire.

Influence sweeping techniques are aimed to ensure that mines, if exploded, will not cause damage to the sweeping vessel. A future trend, in line with increased safety considerations, is to introduce remote controlled minesweeping systems. Remote arming, internal arming delays and ship count mechanisms are examples of devices used by the miner to complicate and extend the time to conduct influence sweeping.

Minesweeping would be preferred to minehunting: against a moored mine threat, when the percentage of undetectable mines is likely to be high, in areas where environmental conditions limit sonar performance, to increase the overall probability of clearance after minehunting operations, in very shallow water, and in deep water when variable depth sonar is not available.

Developments in mechanical sweeping have included the introduction of explosive cutters, the concurrent evolution of lighter sweep wires and the development of deep, bottom following sweeps to counter the deep laid, short tethered, rising mine.

It took some 35 years for developments in influence sweeping to provide an alternative to the traditional sweeps, developed during World War II, but still used today by many navies. The traditional electrode and closed loop sweep produce a large magnetic field by pulsing extremely strong electric currents through the cables. The sweeps are normally combined with an acoustic generator to provide a combined magnetic/acoustic signature. These 'brute force' sweeps are designed to counter simple mine logic. Modern mines, however, can detect and reject pulsing and can also tell the difference between the field produced by these sweeps and an actual ship's signature.

A new approach developed in the late 1970s involves the use of unmanned drone boats, remotely controlled by a specially fitted parent vessel. This solution is used by Germany (the Troika), Sweden and Singapore (*Landsort* MHC

controlling SAM drones), Russia (Vanya control vessels and Tanya drones) and China (Type 312). The Netherlands is developing an improved Troika system using four drones per system. Because the drone is of short length, it produces a powerful but short duration magnetic field which can be rejected by modern mine logic.

Both the US Navy and Japanese Maritime Self Defence Force utilise helicopters for mechanical and influence minesweeping. Helicopters posses the unique capability of being able to be rapidly deployed and are able to undertake fast sweeping while remaining inherently safe from the effects of mine explosions. Reliability problems tend to limit the effective time actually spent sweeping and the electrode sweep deployed from a hydrofoil sled, suffers from the inability to sweep modern mines which can reject the non ship like signature produced by that sweep. Airborne MCM is expensive and requires a significant level of support.

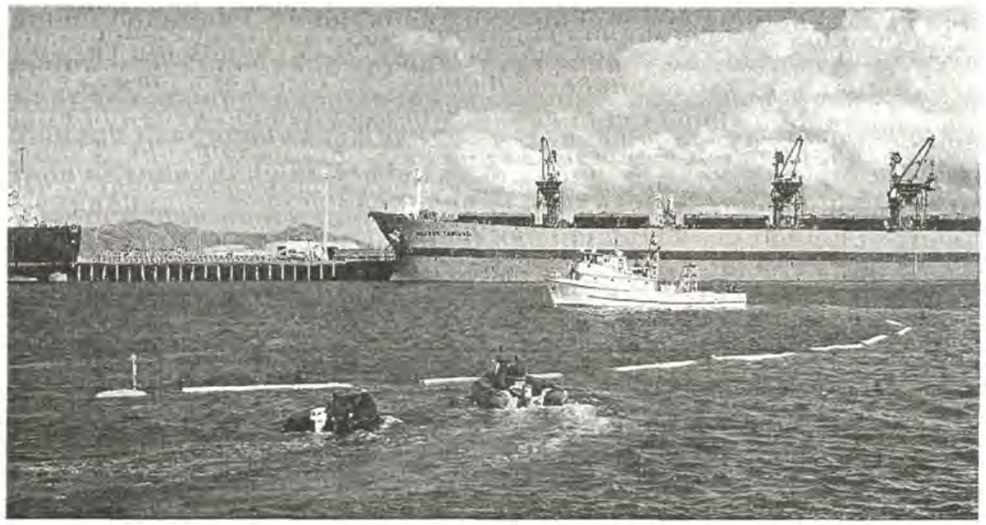
To counter the more sophisticated mine sensor logic, it has been recognised that emulation (or simulation) sweeps are necessary. These are designed to generate magnetic and acoustic signatures which closely resemble those of a particular class of ship and so enable the sweep to be accepted as a valid target by modern mine logic set to fine ship catching tolerances. Emulation sweeps have the advantage that not only can they be used to emulate a vessel's signature but can also be configured to achieve maximum swept width against a known mine threat. In other words, they can be deployed in either Target Emulation Mode or Mine Setting Mode.

Currently there is only one operational emulation sweep. This was developed by the Australian Defence Science and Technology Organisation during the 1980s and entered service in the RAN in 1992. The Dyad Influence Sweep, manufactured by ADI Limited, consists of permanent magnet Dyads and acoustic generators, producing a magnetic and acoustic signature approximating that of a selected class of ship. The modular nature of the sweep provides a capacity to emulate a large number of different ship classes, as well as operating in Mine Setting Mode when required. This distributed dipolar system has proved extremely effective when towed by small auxiliary minesweepers and, Craft of Opportunity (COOP) in RAN operational exercises. It was recently procured by the US Navy for evaluation in a high speed configuration for use from drones, hovercraft and helicopters. The system has also been procured by the Royal Danish Navy and a number of regional navies. Figure 4 shows a Dyad Influence Sweep being deployed using a COOP during a RAN exercise.

Other emulation minesweeps under development use variable magnetic moment (VMM) technology, with the magnetic moment being produced by the application of external power to solenoids in each body. Emulation is achieved by

varying the magnetic moment of each body in the sweep, allowing the complete assembly to be set to a desired steady magnetic state. The Sterne M, under development by Thomson Sintra, is the successor to the Sterne I. The Belgian Navy is designing a new minesweeper and plans to introduce four into service 2000-2003. This class has sufficient space and weight to carry Sterne M, which is planned to undergo at sea evaluation in 1999. The UK, Marconi Modular Multi-Influence Minesweep (MMIMS), has remained under development since the late 1980s. The application of VMM technology to mine countermeasures has yet to be realised.

Figure 4: Deploying a Mini Dyad Influence Sweep using COOP



MINEHUNTING

Minehunting is a highly specialised operation, requiring purpose built vessels and detection and disposal equipments. It involves the use of a high definition sonar to detect and classify mines and a remotely operated vehicle (ROV) or mine disposal vehicle (MDV) to identify and neutralise them. Divers can also be used in this role, or to recover mines for subsequent exploitation for intelligence purposes. The clearing of mines in very shallow water can also be done effectively by divers.

Minehunting has a number of advantages over minesweeping, the principal one being the fact that it uses a forward looking sonar which enables the vessel to avoid passing over the mine while searching. It is currently the only practical MCM technique to counter the pressure mine. Minehunting would be preferred

to minesweeping for quick break-out operations and in areas with good environmental and sonar conditions.

Research began during World War II on the detection of mines using high frequency sonar, and culminated with the introduction of operational minehunting sonars in the early 1960s. Whilst UK and France concentrated on hull mounted sonars, the US developed a short, rigid tethered, variable depth sonar aimed at improving the detection probability and performance in deeper water.

Initial research into minehunting had concentrated on sonar development for detection and classification. Subsequently, in the 1970s, remotely operated vehicles were developed to undertake identification and neutralisation. A variety of these mine disposal vehicles are in service in all navies operating minehunters.

Mine disposal vehicles are essentially similar in character, being directed from onboard and guided to the mine down the minehunter's sonar beam. They are controlled and powered via an umbilical cable which also brings sensor imagery back to the onboard operator. Generally, they are of minimum magnetic signature and can be equipped with low-light television and high definition sonar for mine identification. They carry a remotely controlled charge to neutralise ground mines and some are fitted with a clamp and charge to cut a moored mine's cable. The vehicle is recovered prior to detonating the charge, the whole operation being rather time consuming.

The operating envelope of a Hull Mounted Sonar (HMS) is limited by ship motion, typically up to sea state 4, due to flow noise and quenching created when the vessel pitches heavily. The major environmental factors affecting the performance are the sound velocity profile of the water column and bottom type. Particularly in regional waters, an adverse sound velocity profile regularly develops, significantly reducing performance below the layer.

There are a number of capable hull mounted sonars in the region, primarily those produced by Thomson and STN Atlas. The Royal Australian Navy recently accepted the Atlas DSQS-11M into service in its two *Bay* class inshore minehunters after a series of comparative trials. These demonstrated that the DSQS-11M is a most capable hull mounted minehunting sonar, and exceeded RAN requirements.

The limitations of hull mounted sonar gave impetus to the development of modern, capable, Variable Depth Sonars (VDS). The ability to deploy the sonar at any depth has the advantage that the sonar can be positioned to minimise the effects of adverse sound velocity profiles. Additionally, grazing angles to the seabed can be reduced, increasing detection and classification range, because of the reduction in reverberation level. Ship or weather induced disturbance on the sea surface does not effect the sonar, and it is decoupled from the ship's motion

which means hull noise does not impair sonar performance. The primary advantage of the variable depth sonar is that the longer detection range and coverage in all environmental conditions, together with the higher probability of detection and classification, means an area can be cleared more quickly.

A comparison of the coverage of hull mounted and variable depth sonar is given in figures 5 and 6. Figure 4 indicates the difference in coverage in iso-velocity water and figure 6 illustrates the impact of a severe sound velocity profile.

Figure 5: Typical HMS and VDS Coverage in Iso-Velocity Water

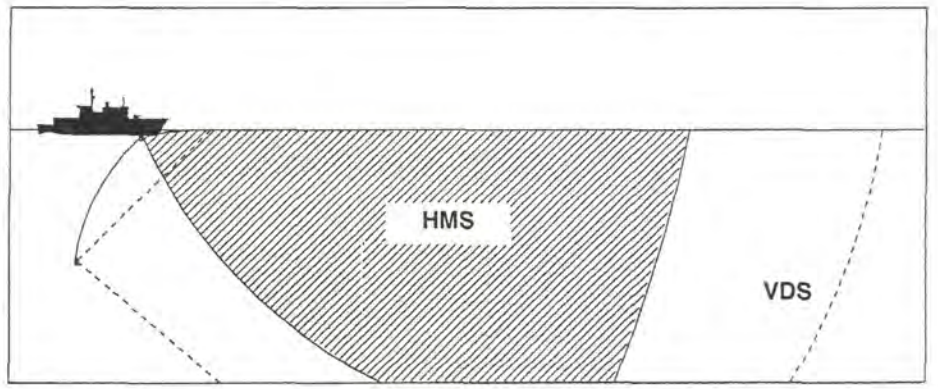
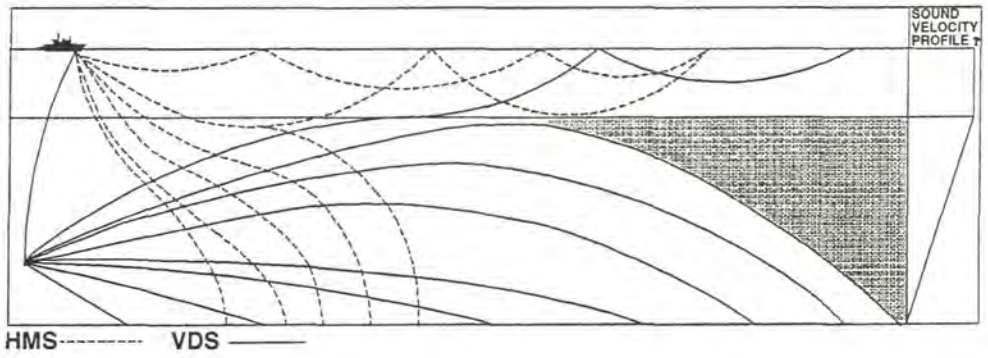


Figure 6: Impact of a Severe Sound Velocity Profile on Sonar Performance



The most capable variable depth sonars available are the GEC-Marconi Type 2093 and the Thomson/Raytheon AN/SQQ32. Experience gained in the Royal Navy with the use of Type 2093 has indicated that minehunting effectiveness of the overall platform has improved significantly. US Navy trials with SQQ32 have also been successful. Following an extensive evaluation of all sonar types, the RAN recently selected the Type 2093 variable depth sonar for its new *Huon* class coastal minehunter. This sonar can be operated in hull mount position or deployed to depth, allowing operations in 10 – 200 metres of water. Together with the integrated combat and platform systems, the *Huon*, being constructed by ADI and planned to enter service in 1998, will be a most effective and capable minehunter.

As well as conventional minehunting sonars, towed side scan sonars can be used for route survey and route selection operations. Towed side scan sonars are available with a wide range of capabilities ranging from the expensive, multi beamed sonars designed specifically for detection and classification of mines through to small single beam sonars developed for geophysical and general search applications, as well as military applications. The disadvantage of such sonars is that the deploying vessel must precede the towfish through the minefield. Also, it only allows a passing look at the bottom and does not allow the ship to stop, hover and examine any mine-like object.

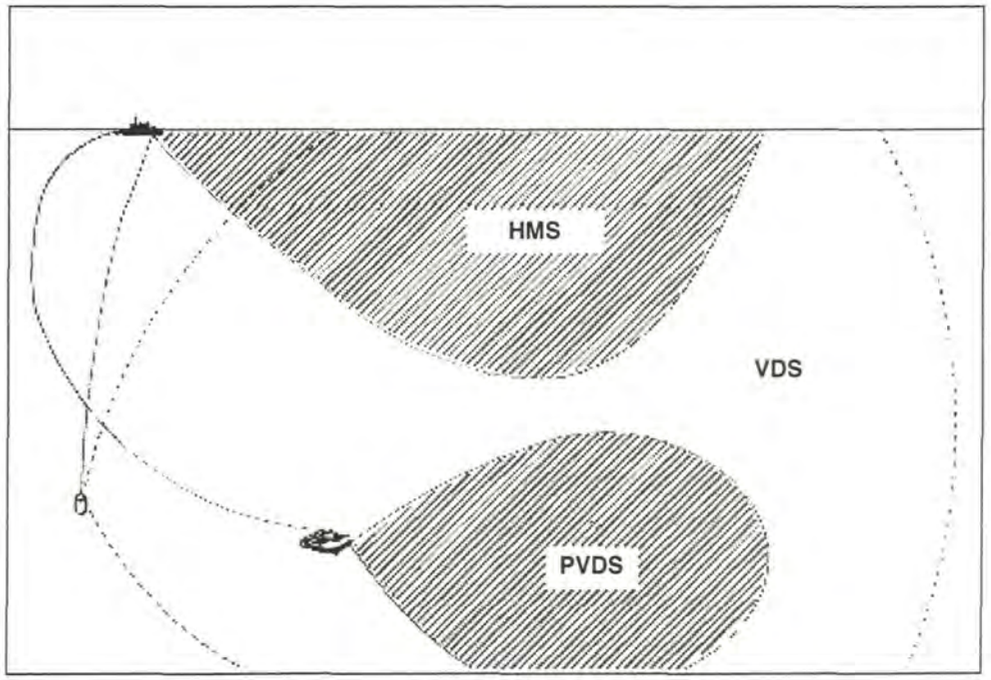
The Royal Danish Navy has recently introduced a minehunting concept using side scan sonars. The MCM version of the Standard Flex 300 (SF300) class, includes, two remotely controlled minehunting drones towing the Thomson TSM 2054 high resolution side scan sonar. Sonar and location data is transmitted through a high speed data link to the parent ship. During minehunting operations, the two minehunting drones are deployed to the first segment whilst the parent ship remains in safe water. When all objects detected are classified, the SF300 enters the segment and conducts identification and disposal with the onboard Double Eagle mine disposal vehicle, whilst the drones undertake concurrent search and classification in the next segment. Under this concept, minehunting is conducted remotely by the drones while the parent vessel remains at a safe distance from the potential threat.

The Royal Danish Navy intends to adapt this concept to use the drones to deploy the Dyad Influence Sweep. This will result in a capable emulation sweep being deployed remotely and offers an alternative minesweeping system to the Troika and SAM minesweeping drones.

The evolution of minehunting systems to counter the modern mine threat has resulted in the development of highly sophisticated sonar systems carried on very expensive platforms. The development of a remotely operated vehicle mounted sonar, often referred to (rather descriptively) as the 'dog on lead' minehunting

concept, has been prompted by the desire to reduce risk to the minehunter. The Propelled Variable Depth Sonar (PVDS) or Self Propelled variable Depth Sonar (SVDS) searches well ahead of the command platform, being connected via an umbilical cable for power and transmission of data. The minehunter can then operate in a safe, stand-off position. The PVDS allows for operations in both shallow and deep water and the configuration offers improved performance in terms of detection and classification because of the use of a higher sonar frequency. Enhanced classification can reduce the number of times the mine disposal vehicle has to be used, increasing the clearance rate. Typical sonar coverage in deep water for PVDS, VDS and HMS is shown in figure 7.

Figure 7: Typical Sonar Coverage in Deep Water for PVDS, VDS and HMS



The concept remains under development and initial trials are encouraging. While automatic control of the system and accurate position keeping of the vehicle are possible, mechanical problems associated with cable drag, power, use in strong tidal currents, and vehicle reliability remain to be solved. This means that PVDS potential, whilst promising, will not be realised as a fully operational system for some time and may well require the development of a second generation vehicle.

The conventional mine disposal vehicle is a sophisticated and expensive subsystem. It is also vulnerable to mine explosion during mine identification and when releasing the mine disposal charge. This requires careful handling and, combined with other operational factors, results in lengthy mine destruction mission times. Consequently, a number of one-shot or expendable mine disposal vehicles are under development. The major benefit is the significant reduction in time for mine disposal with a target for mine neutralisation of some 10 minutes compared to some 45 minutes for conventional vehicles.

The disposable weapon being small and light is easily launched in all sea conditions. The system is typically tracked and guided to the target for visual inspection via a fibre optic line. Such a weapon requires the inherent capability to investigate a number of mine-like objects during any deployment cycle. The highly manoeuvrable weapon can direct a shaped charge on the mine case which is more effective against the latest generation of insensitive explosives. Costs of this weapon are estimated to be comparable to a standard mine disposal charge; minimal maintenance offers further cost benefits.

CONCLUSION

The economic, geo-political and strategic trends in the Asia-Pacific region all suggest that the future security environment will be substantially different from that of the past. There is, however, considerable debate about whether, overall, it will be more or less peaceful. There are those who argue that continued economic prosperity and growing trade and economic interdependence, accompanied by the strengthening power of democratisation, are sufficient to guarantee peace and stability. But, as Paul Dibb recently remarked in his paper 'Towards a New Balance of Power in Asia', there is no evidence to support the theory that economic interdependence leads to peace.

The alternative realist school notes the long-standing and deeply held ethnic, cultural, border and other cleavages in the region and the tensions that are already obvious in numerous places. Indeed, almost every country in this region harbours suspicions or rivalries with one or more of its neighbours. Managing rapid geo-economic and geo-strategic change in this environment will clearly be demanding.

Attempts to facilitate the evolution of the security environment in this region to maintain stability and peaceful development will require considerable effort in the maritime field. This is because in contrast to Europe, Africa or South America, the maritime environment in the Asia-Pacific region provides the primary, and for many countries, the only security interface with rivals and potential enemies. Regional disputes are, in consequence, frequently played out and are often most in evidence at sea.

This is a notable feature of the more obvious outstanding security disputes on the Western Pacific rim. Between Japan and Russia there is the northern territories dispute. Between Japan and China, the Senkaku Islands issues. Further south is the Taiwan Straits and then the multiple overlapping claims in the South China Sea, particularly within the Spratley archipelago. While these problems remain, there is the potential for the use of mines. The increasing attention given to submarines in the region also raises the potential for covert minelaying.

Given the nature of the waterways, with many common boundaries, there is potential for cooperation in MCM to maintain passage through important straits and in international waters. This is a fruitful area for naval cooperation and confidence building measures, particularly as it is an essentially defensive activity.

The use of mines has been evident in all naval operations in the post World War II era. This factor emphasises the importance of maintaining a viable MCM capability throughout the Asia Pacific region. Given the advances in mine technology, it is also important to ensure that future MCM force structures are balanced to maintain the edge against the potential threat. The number of major units being introduced into regional force structures also emphasises the need for capable MCM forces to ensure these units can proceed to sea.

Regional MCM force structures includes a range of minehunting sonars, mine disposal vehicles and obsolescent minesweeping equipment. Steps are being taken to update and improve these capabilities. Some systems will not require purpose built MCM platforms and hence, can be introduced with less impact on tight defence budgets. Some of the MCM technologies under development will take some years before they can seriously be considered for introduction into service. However, the range of systems in regional force structures will increase, and with this, the ability to best counter any mining campaign through regional cooperation.

The skills involved in minehunting and minesweeping operations are complex, and not having them in some basic form, may mean not being able to acquire them in time to match an emergent threat in a period of deteriorating security. The limited mine countermeasures resources in the region may need to be coordinated to effectively counter any mine threat. The key to successful cooperation lies in the ability for navies to easily operate together. This is enhanced by common equipments and doctrine. Australia's resurgence in the mine countermeasures field, together with its strong research, technical and support background, means that the Royal Australian Navy, with its capable MCM force structure, has the potential to contribute significantly to regional cooperation in this area of warfare.

16 Technological and Operational Trends in Submarine Warfare

GRAEME DUNK

THIS paper deals with the subjects of technological and operational trends in submarine and anti-submarine warfare. Clearly, the two are closely linked and what happens in one field will affect, and will be affected by, what happens in the other. I will illustrate the nature of this relationship with three quotations. The first was spoken by H.G. Wells, at the beginning of this century, when he stated:

> I must confess that my imagination, in spite of spurring, refuses to see any sort of submarine doing anything, but suffocate its crew and founder at sea.[1]

How much easier life may have been if this were true! The quotation is used here, not to advocate the suffocation of submariners (however attractive that option may seem) but to highlight the difficulty in foreseeing the operational implications of technological advances, even for someone as far sighted as H.G. Wells. Marshall Foch had the same problem in foreseeing the operational potential of the aeroplane just prior to the outbreak of the First World War.

Who knows, maybe in the next century technological advancement may render the submarine obsolete, or it may follow in the wake of the land mine and become an internationally-banned armament. In both cases, the demise of the submarine would be accompanied by the demise of anti-submarine warfare. We must therefore focus on the nearer aspects of the new century and consider the technological and operational trends into the new century.

Somewhat more recently than either Wells or Foch, in 1937, Admiral Raoul Castex of the French Navy wrote:

> Though it (the submarine) is no more able than any other ship to cover the entire sea, it will, however do so in the mind of the enemy, in whose imagination the submarine's invisibility confers the gift of omnipresence. Fear therefore leads the enemy to take constant anti-submarine measures, just as if there were one to be found in every mile of sea.[2]

Apart from the fact that nuclear submarines are able to cover more of the sea than their conventionally-powered brothers, these words hold true today and continue to reflect the attraction of the submarine to all countries. Submarines *do* 'have a strategic impact out of all proportion to their cost'[3] and it is this feature of perceived omnipresence which acts, depending upon whose submarines they are, as a strong deterrent or as a strategic concern. One only has to look at events in the Middle East since Iran's acquisition of its Kilo Class submarines to see that this point is true.

The third quotation is more recent still and anonymous, although widely used by non-ASW officers of the Royal Australian Navy. It states that:

> ASW is like peeing yourself in dark trousers. Nobody notices anything, but it gives you a warm feeling.

This quotation highlights the problem of 'marketing' ASW within the wider defence debate and during the battle for force development funding. The submarine is a covert beast: it lurks, it creeps, it slinks and it ambushes. Unlike the air or surface threat, it presents nothing to be seen, sometimes nothing that can be detected. Actions taken against it often occur in another medium and are hidden from view. Furthermore, it can strike without warning.

The submarine is unlike other naval vessels. In classical maritime strategy the submarine's sole part is that of sea denial, although Jan Breemer has previously advocated a crisis management and forward presence role for nuclear submarines.[4] The submarine has only a limited politico-military role;[5] indeed only limited peacetime roles. It is, essentially, an offensive strike or counterstrike capability. ASW, in contrast, is inherently a defensive capability, being the natural counter to the use of submarines, or the potential use of these vessels, by another nation.

This chapter will concentrate on Australia's region, where countries such as Singapore, Thailand and Malaysia have plans to introduce submarine forces, and Indonesia is seeking to improve its existing force. Slightly further afield China, Taiwan, South Korea and India are also looking for qualitative and/or quantitative improvements in their submarine forces. The focus will be on conventionally powered, rather than nuclear powered, submarines and on the ASW operations against these platforms, even though China has, and India is pursuing a nuclear capability.[6] This chapter will also concentrate on the interaction between submarines and non-submarines; while acknowledging that submarines can be the most effective ASW platforms.

The impact of technological developments on naval operations will also be addressed, instead of trying to discriminate between what may be deemed

operational and what may be strategic, as any distinction depends entirely upon what definitions are used. Taking the US position, this entire chapter would be operationally-focused, as 'strategic' has come to refer to the long range nuclear strike capability. Other definitions would suggest that the entire chapter deals with the preparation for combat and is therefore strategic.[7]

IMPACT OF SUBMARINE TECHNOLOGY ON MARITIME OPERATIONS

Developments in submarine capabilities will impact on the conduct of ASW operations and hence on defence roles such as surveillance, maritime patrol and response and protection of shipping.[8] Given the current state of submarine expertise in the region, advancements are more likely to come from the introduction and adaptation of technology developed elsewhere than from the development of any completely new capability.

General trends in submarine technology are toward lower levels of radiated noise, lower target strength for active sonar through improved anechoics and design, greater diving depths, higher speeds, better battery and propulsion systems and improved sensors and weapons. As in all other modes of warfare, they also include more flexible and innovative ways to filter, fuse, present, and hence to use, an ever-increasing array of operational and intelligence information. This discussion will be limited to the implications of the following; air independent propulsion, improved detection systems and improved weapons, including the introduction of anti-air capabilities.

Air independent propulsion. The first of these developments is AIP. Current surveillance activities against conventional submarines are heavily dependent on the capabilities of maritime patrol aircraft and helicopters, using a combination of radar and passive sonobuoys. Both of these systems depend upon the submarine "betraying itself' in some way; either by exposing a mast above the surface of the water, or by increasing radiated noise when snorting to recharge batteries. AIP will have implications for both detection processes, as it will significantly reduce the requirement to snort.

As an indication of the scale of this reduction, Swedish Navy experience with the Stirling Engine in 1000 tonne submarines has shown that 'underwater endurance without snorting can be increased from a few days to at least two weeks'.[9] The detection probabilities by passive sonar, already problematical, will thus be reduced to next to nothing. Radar detection probabilities will also reduce as a result of the reduced requirement for the submarine to expose masts. The

current tactic of providing continuous MPA coverage over a probability area, to catch the submarine when it is finally forced to snort, will therefore become largely redundant.

The introduction of AIP capabilities will therefore require a significant change in the conduct of anti-submarine operations. Given that passive acoustic operations will reduce in effectiveness, as will the currently available non-acoustic detection systems, the focus for future ASW operations must return to active sonar and/or new non-acoustic developments. These will be explored later in the chapter.

Submarine detection systems. There are likely to be two key areas for developments in submarine detection systems. These will be the ability of submerged submarines to detect and track aircraft and the increasing use of active sonar in submarine-on-submarine operations. Trials to date have indicated that the detection of aircraft by towed array is possible at long range and in some circumstances, submarines can also determine speed and height. This ability will have significant repercussions for ASW forces, and will exacerbate the impact of AIP.

Submerged submarines will therefore be aware of the presence of patrolling aircraft and will be able to ensure that any exposure of masts can be undertaken as safely as possible. The current operational posture of maritime patrol aircraft, adopting an intermittent radar policy to catch the submarine unawares during periscope exposure, will cease to have relevance. A capability to estimate height and speed by acoustic means whilst submerged may also allow the submariner to determine whether the aircraft is engaged in ASW patrol, surface search, or is in transit. Clearly, such information is tactically important.

A move by submarines to use active sonar against other submarines, will be required to counter the process of continuing quietening and the reducing utility of passive sonar in achieving detections. Certainly, transient analysis is currently believed to offer detection opportunities, but these are also likely to become progressively less reliable as effort is made to reduce the impact of such indiscretions. These active transmissions will be disguised to mimic naturally occurring sounds, such as dolphin clicks. This would lessen the counter-detection impact of using active sonar for detection and/or fire control solution generation.

Weapons. A third factor which will impact significantly on ASW operations will be the introduction of improved and different submarine weapons into the inventories of regional countries. There would seem to be three options here, namely:

a. more capable torpedoes, both acoustic homing and wake homing;

b sub-surface launched anti-ship missiles. Whilst these are already widely used in extra-regional submarines and in regional surface and air platforms, any success in reducing the effectiveness of anti-ship torpedoes may lead to an increased use of missiles. Countering the missile-firing platform is an ASW problem: countering the missile itself is an anti-air warfare problem, which illustrates the need for a balanced self-defence fit for surface ships; and

c. further in the future, the introduction of land-attack missiles of the Tomahawk variety.

The mooted increase in submarine numbers in the coming years, the likely increase in the number of countries operating submarines, the introduction of a wake-homing variant by European torpedo manufacturers and continuing development of acoustic homing torpedoes means that there is a high probability that there will be a greater diversity of torpedo types, including wake-homers, within Australia's region.

The present growing interest in surface ship torpedo defence (SSTD) will also need to consider these developments. Torpedoes are likely to become ever more capable as computer software, perhaps with artificial intelligence, provides better acoustic counter-countermeasures (ACCM) and targeting capabilities. Such torpedoes will be able to discriminate between ship types for better target selection; perhaps by requiring consistency in active and passive sonar responses (target length, movement, and radiated noise patterns for example). New torpedoes are also likely to use multiple simultaneous active frequencies.

The combination of submarine proliferation, a variety of torpedo types, improvements in torpedo target selection and anti-decoy logic will all serve to make passive countermeasures less effective (or more elaborate and expensive) and torpedo success more likely. Significant effort will be required in torpedo defence, especially when considering that 'it is much easier to sink a ship by letting the water in at the bottom, than by letting the air out at the top'.[10] Investigation of hard kill solutions to torpedo defence will require higher priority and a greater investment. as a counter to the likely reduction in effectiveness of passive reactions. Hard kill does, however, require an ability actively to track the torpedo in three dimensions as the engagement unfolds, so that the torpedo can be targeted most accurately.[11]

A most significant development in submarine, and hence anti-submarine, warfare would be the introduction of a land-attack missile capability in conventional submarines. The impact of this would be to force ASW forces away from

concentrating solely on the focal areas and have them consider detection in open ocean areas. This would present a vastly greater problem for ASW forces, and one which neither of the superpowers had been able to solve during the free-spending period of the Cold War.

As an indication of the size of the problem, defence of Sydney or Fremantle would require the effective underwater surveillance of between 400,000 sq. mm. (for a 500 nm. range missile) and 1.5 million sq. nm. of open ocean (for a 1000 nm. range missile). Depending upon the coastal geography, the task could expand to over three million square nm. – or roughly the land area of Australia. Current ASW technologies cannot undertake such a task, with the implication that a land-attack capability would elicit a classical air defence response.

Submarine anti-air capability. The last submarine development to be covered is the introduction of submarine launched anti-air missiles (SLAM). These would fundamentally affect the current utility of aircraft in an ASW role, as current tactics for the prosecution of submarines are based on the ability of aircraft to overfly the submarine's position with impunity.

A SLAM capability is made more likely by an increasing ability of submarines to locate and track aircraft whilst submerged. It may also be possible to develop a system which the submarine leaves in its wake. Such a system could employ an acoustic trigger to activate against aircraft approaching along a submarine's track (the classic engagement tactic). 'On-top' calls may come to be a thing of the past, and may well serve only to indicate the ditched position of the offending aircraft.

The introduction of a SLAM capability therefore creates two fundamental problems for ASW forces; detection and tracking, and engagement. The operational response to the first problem may lie in Low Frequency Active (LFA) sonar.

An LFA capability, fitted either to ships or helicopters, could allow those units to detect and then maintain contact on a submarine from outside the SLAM range. Ships engaged in this activity would also need to remain outside the viable range for anti-ship torpedoes. SLAM would therefore force a substantial change in ASW tactics; away from the current posture of ships clearing the datum and leaving the prosecution to aircraft and toward a posture which would require all units to stand off. The utility of the maritime patrol aircraft in ASW operations will be much reduced, unless a low frequency capability can be developed for sonobuoys.

The second part of the SLAM problem is engagement. Without the ability to put an aircraft over a submarine's position to drop a torpedo, a long range capability is required if submarines are to be prosecuted. There would seem to be several possibilities for achieving this, including:

a. resurrection of an Ikara-type missile system to deliver torpedoes, perhaps called the 'Lazarus' missile system given the current state of Ikara;

b. use of an unmanned airborne vehicle to carry and deploy a torpedo. A UAV may have significant advantage over a missile system in its ability to loiter in the target area if contact is lost, or if tracking is degraded after launch; and

c. the use of long-range wire guided torpedoes from a hovering helicopter or a nearby surface ship. A heavyweight torpedo would be required to provide the necessary endurance and range. The disadvantage of this approach would seem to be the length of time that an engagement would take and the obvious need to maintain sonar contact over this period.

IMPACT OF ASW TECHNOLOGY ON MARITIME OPERATIONS

ASW developments, although essentially reactive and defensive, will affect submarine operations and thus will affect the capacity to conduct military tasks such as protection of shipping.

Acoustic Detection. As stated earlier in this chapter, the introduction of submarine capabilities such as AIP and detection of aircraft will exacerbate the current downward trends in the effectiveness of passive acoustic systems. Taking this premise, the attraction of a technology such as LFA sonar is that it provides a way to get long range detection, at a range greater than the likely submarine torpedo firing range. LFA can therefore place pressure on the submariner; confronting him with the choice between closing for an engagement (knowing that he stands a good chance of being detected and attacked prior to achieving that aim) or having to fire his weapons from further away, knowing that the fire control solution will be more prone to error and hence that each torpedo will be less effective.

There is also an argument that low frequency active sonar will essentially serve as a beacon; illuminating the potential targets to the submarine at long range. In some circumstances this will be true and LFA will not be any miracle cure for ASW's ills. It can, however, be a powerful tactical weapon, to be used to one's advantage. In the circumstance of a surface group approaching a focal area, the use of active sonar will not disclose the presence of that group. The submarine will know that ships are approaching; after all, that is probably the reason for its patrol location. What LFA sonar may do is to provide some gratuitous information on ship types, but this may be limited by the use of bistatic or multistatic LFA applications, where only one unit transmits but many receive.

A transmitting unit may be a surface ship, a helicopter, an explosive device, or perhaps a bottom mounted transmitter. The receiving units may be surface ships, helicopters, a bottom array, a sonobuoy or a sonobuoy field, or any combination of these. Provided that the communications problems could be overcome, there is no reason why a friendly submarine could not use the active pulses, whilst itself remaining covert. To do so, it would need an accurate knowledge of either the location of the transmitter, or of the instant of the transmission.

ASW forces traditionally have operated on own-ship sensor information, with operational integration undertaken at the manoeuvre or reaction level. Multi-static operations can allow this operational integration to be undertaken at a more fundamental level, at the information gathering stage, and all units can operate with the same raw information.

Taking this strategy one step further, why should it not be possible to share all information among all units, not necessarily only those in close proximity? In this way, a picture could be built up by forces prior to entering an area, provided of course that there was at least one ASW platform covering the area. Information could be uplinked to satellite from a bottom array or other system and rebroadcast for use by other units.

Non-acoustic detection. As discussed previously, the impact of developments in submarine propulsion systems and in the acoustic detection of aircraft will be to reduce the effect of radar detections from maritime patrol aircraft; the classic non-acoustic detection mechanism.[12] What other non-acoustic means may be viable?

There has been much recent interest in lasers for submarine detection, and some commentators have claimed that this will be a significant factor in countering submarines in shallow water.[13] The problem with lasers is that the light does not penetrate beyond about 60 metres and currently achievable area search rates are low. Lasers may, therefore, have a part to play in very shallow water with low turbidity, but are unlikely to have a wider application in combating submarines under all environmental conditions.

Magnetics may also offer some possibilities. More sensitive magnetic anomaly detection systems will continue to be used as a localisation aid prior to weapon release, but not as area search systems. Bottom-mounted magnetic arrays may prove useful in focal areas, as an alternative to acoustic arrays. Such arrays would need to be integrated with a surface picture compilation system (perhaps a radar site) to correlate any magnetic fluctuations with surface traffic.

Satellite surveillance has also been used against submarines. It has been aimed at detecting submarines operating in very shallow water, relying on visual means, or on detection of a submarine moving in the water column by the use of synthetic

aperture radar techniques. SAR techniques will be less effective against conventional submarines, than against nuclear boats, because of their smaller size and generally lower speeds. Both parameters will affect the size of the water disturbance and hence detectability.

More exotic non-acoustic mechanisms are also being investigated. One is magneto hydrodynamics, which aims to exploit the current generated by the submarine moving the water around it. This water, being electrically conductive and moving within a magnetic field, thus distorts that field. The effect is said to extend for up to 20 kilometres behind the position of the submarine and 10-15 kilometres to the side. The problem is that the size of the effect is many times less than the background noise, and some fancy signal processing will be required to recover it.

CONCLUSIONS

And now for some conclusions and recommendations for regional ASW. Firstly, the numbers of submarines operated by regional countries, the quality of those submarines, and the number of countries operating submarines will all increase. These increases will see the introduction of submarine technologies developed elsewhere, rather than the development of new technology from within. To some extent, the technology which will require counteraction already exists in other areas, but has conveniently been ignored by force structure planners. Torpedo defence is a case in point here.

Secondly, the introduction of these technologies; AIP, the ability to detect and track aircraft whilst submerged and, into the future, the ability to engage aircraft whilst submerged, will require a fundamental reappraisal of the way in which ASW is currently undertaken. A reduction in the effectiveness of the maritime patrol aircraft is likely to be one result.

Regional countries involved in ASW should therefore consider low frequency active sonar and multistatics as the focus of their ASW effort for the foreseeable future. An investment will also be required in tactical data management (including the provision of planning and operational advice to commands). Torpedo defence will also be a necessity, as without it any investment in ASW is made without insurance. Importantly in this case, a torpedo defence system will be many times less expensive than the surface ship that it may save.

Nevertheless, the acquisition of the right systems is but the first step in developing an ASW capability. A detailed knowledge of the operating environment and the institution of an effective training regime are also required if maximum effectiveness is to be obtained.

Furthermore, the matter of regional submarine proliferation will demand consideration. In the coming years Australia, Indonesia, Malaysia, Singapore and Thailand will very likely operate submarines in Southeast Asian waters. Additionally the US, Japan, China, Taiwan, South Korea, Russia, India and France could have their submarines in the area, either transiting or in direct support of national objectives.

A submarine detection by active sonar (increasingly the most likely sensor to gain a detection) is therefore likely to pose the important question, 'whose submarine is it?' The answer to this question may be fundamental in what further action is taken: tracking, attempting to force it to the surface for identification, or even engagement. Any action that can be taken, either technical or political, to enable the important classification task to be performed (or even to say whose submarine it is not) may be critical.[14]

Notes

1. H.G. Wells, *Anticipations*, 1902.
2. R.V.P. *Castex, Strategic Theories*, Annapolis, Md: Naval Institute Press, 1994, p. 13.
3. G.A. Dunk, 'Low Frequency Active Sonar: Countering the Conventional Submarine', *Australian Defence Magazine*, Vol. 3, No. 4, April 1995, p. 10.
4. J.S. Breemer, 'Where Are the Submarines?' *U.S. Naval Institute Proceedings*, Vol. 119/1/1,079, January 1993, pp. 37-42.
5. G. Evans, Australia's Regional Security, Ministerial Statement by Senator the Hon Gareth Evans, QC, Minister for Foreign Affairs and Trade, Canberra: Australian Government Publishing Service, 1989, paras. 71-90.
6. See comments attributed to Admiral Das, Indian Navy. in R. Bedi, 'India will build aircraft carrier for new century,' *Jane's Defence Weekly*, 26 August 1995, p. 3.
7. Captain de Vaisseau Darrieus, for example, has defined the difference as 'Strategy evokes the idea of preparation for which the end is battle, and tactics the execution of the battle.' Castex, *op. cit.*, p. 7.
8. *Defending Australia: Defence White Paper 1994*, Canberra: Australian Government Publishing Service, 1994, paragraph 4.35 lists the key ADF roles as command, control and communications; intelligence collection and evaluation; surveillance of maritime areas and northern Australia; maritime patrol and response, protection of shipping, and offshore territories and resources; air defence in maritime areas and northern approaches; defeat incursions on Australian territory; protection of important civil and defence assets, including infrastructure and population centres; and strategic strike.
9. Vice Admiral Frank Rosenius, Royal Swedish Navy, 'Littoral and EEZ Requirements: Submarine Operations – Conventional,' a paper presented to the conference *Sea Power For The Next Decade*, London, 6 May 1994.
10. *Anon.*

11. G.A. Dunk, 'An Investigation of the Critical Parameters of a H*ard Kill Torpedo Countermeasure System,' The Technical Cooperation Program, Minutes of the 17th meeting of the Technical Panel GTP-11*, Annex E, June 1989.
12. For a readable summary of non-acoustic detection mechanisms see D.C. Daniel, *Anti-Submarine Warfare and Superpower Strategic Stability*, Basingstoke: Macmillan, 1986, Chapter 2.
13. See for example, S. Ryan, 'Shallow Threats: Has the Shallow Water Submarine Threat to Blue Water Navies Been Overrated?', *Asian Defence Journal*, 7/95, July 1995, pp. 14-18.
14. G.A. Dunk, 'Anti-Submarine Warfare' in Dick Sherwood, (ed) *Operational and Technological Developments in Maritime Warfare: Implications for the Western Pacific*, Canberra: Strategic and Defence Studies Centre, Research School of Pacific Studies, Australian National University, 1994, for a suggestion for a water space management regime for Southeast Asian waters. See also G.A. Dunk, 'Do We Need a Southeast Asian Waterspace Management Regime?' *Asian Defence Journal*, 5/95, May 1995.

Part Three
Cooperative Naval Activities Beyond 2000

17 Prospects for Naval Cooperation

SAM BATEMAN

A recent Australian statement on practical proposals for security cooperation in the Asia-Pacific region identified maritime cooperation as an important trust-building measure. This joint statement by Foreign Minister Gareth Evans and Paul Dibb stated that:

> Developing a cooperative approach to the maritime area is clearly a strategically important issue, not least because of the crucial nature of the sea lanes passing through Southeast Asian waters and the South China Sea.[1]

The Evans-Dibb statement preferred the concept of 'trust-building measures' (TBMs) rather than confidence-building measures (CBMs) to convey the idea of a less formal approach to security cooperation and dialogue, based upon personal contacts and relationships.[2] The process is one of socialising, or as the Malaysian Prime Minister, Mahathir Mohammad, has been quoted as saying, the first step is 'the tedious business of getting to know each other'.[3]

Much the same could be said about naval cooperation in the Asia-Pacific region. The first step in achieving cooperation between the essentially unlike navies in the region is proving to be more time-consuming than expected. It involves overcoming divergent national interests, finding some common ground, and overcoming deeply held mutual suspicions, and even resentment. Some would question whether it is worth it, or even desirable, without more progress at the political level.

Naval cooperation is both a potential maritime confidence and security building measure in its own right and an important subset of broader maritime cooperation. Because maritime issues are so important in the Asia-Pacific region and so many threats to national security are manifest mainly at sea, there is great scope for regional cooperation and dialogue on maritime affairs. Or as the *Asian Defence Journal* recently noted:

> ... the challenge of Pacific Asia is very much of a maritime-nature and ... much thought will be necessary in order that collaboration can be achieved so as to sustain the region's peace and prosperity now and in the future. On the other hand, it is also apparent that naval strength or sea power is just as important, and that key regional countries will of necessity have to be naval powers of some standing.[4]

This chapter examines prospects for achieving a higher level of cooperation and collaboration among Asia-Pacific navies in the years ahead. It assumes that this would constitute a worthwhile regional TBM. It also discusses the nature of regional naval cooperation and possible ways in which cooperation might be developed. The central argument is that to enhance the prospects of naval cooperation in the region and overcome the potential political 'stumbling blocks', we should recognise the links between naval cooperation and:

a. regional security cooperation to promote peace and security in the region, and

b. regional maritime cooperation to manage the marine environment of the region and build a stable regional maritime regime with law and order prevailing at sea.[5]

The links with the broader notion of maritime cooperation are important, because they offer scope for overcoming the natural instinct of navies (and defence forces generally) in a region still plagued with tensions and uncertainty, not to cooperate with each other. These links are especially necessary because of the significance of seaborne trade in the Asia-Pacific region and its emergence as the dominant common maritime security interest of regional countries.

The main objective of this chapter is to move beyond the first stage of rhetorical naval cooperation and 'socialising', which exists at present, to achieve something which is meaningful operationally, and will help to reduce the risk of conflict in the region, while also contributing to good order at sea.

NAVAL COOPERATION

The scope of possible naval cooperation is very wide.[6] It includes low-key, confidence-building activities including ship visits, fleet reviews,[7] personnel exchanges, navy-to-navy talks, and multilateral naval conferences. It also involves more ambitious activities, such as information and intelligence exchanges, joint doctrine development, standard operating procedures (SOPs) for exercises and peacetime operations, bilateral and multi-lateral exercises, avoidance of incidents at sea (INCSEA) agreements, and cooperation on tasks such as marine

scientific research and anti-piracy operations. Notably, it also extends to the complexity of combined operations; cooperative maritime surveillance, standing regional naval forces, cooperative SLOC protection, and mine countermeasures.

While there has been a lot of talk about it, naval cooperation in an operational sense is not widespread at present in the Asia-Pacific region, other than in the South Pacific, where a high level of cooperation has been achieved with maritime surveillance and operations to combat illegal fishing.[8] Some progress has been made towards both maritime and naval cooperation in Southeast Asia, with cooperative marine scientific research, anti-piracy operations, marine environmental protection programs, and bilateral and even multilateral exercises, including the very successful *Kakadu* series of fleet concentration periods hosted by Australia.

Little progress is evident with any form of maritime cooperation in Northeast Asia, with the notable exception of the INCSEA agreements between Russia and South Korea, and also with Japan.[9] The pressures of economic rivalry and strategic unrest in Northeast Asia, including the long-standing bilateral tensions; such as between Korea and Japan, Japan and Russia, and Japan and China, inhibit the confidence-building process, with operational naval cooperation virtually unknown in the sub-region. The first port call ever made to a Japanese port by South Korean warships occurred only in 1994, but some reports suggest that it was not a success, with little warmth evident in the relations between the local population and the visiting crews. In terms of broader maritime cooperation, Northeast Asia is almost unique for its lack of regional institutions,[10] despite the great regional interest in ocean affairs.

Multilateral naval exercising in East Asian waters is largely constrained at present to the annual maritime exercises conducted under the auspices of the Five Power Defence Arrangements, usually in the South China Sea. Some bilateral activity occurs within ASEAN and between the USN and the RAN on the one hand, and with some Asian navies on the other, but this is usually little more than basic passage exercising without any tactical scenario. The *Kakadu* exercises have been designated 'Fleet Concentration Periods' (FCP) and do not involve any over-arching political scenarios. They involve a series of specific training activities, such as weapon firings, convoy exercises, ASW training and replenishment at sea drills, without any higher order strategic or operational concept. There is no designation of Orange and Blue forces.

The Western Pacific Naval Symposium (WPNS) offers potential as a region-wide forum in which to develop concepts of naval cooperation, but reports from its last two meetings suggest that the forum may be 'running out of puff' although the WPNS workshops may still be achieving something worthwhile. As discussed later in this chapter, the possibility exists that the WPNS may have become 'out

of step' with the level of political consensus among member countries.

Naval cooperation is part of the processes of both regional security cooperation and regional maritime cooperation. Naval cooperation both supports, and is supported by, the regional security cooperation manifest in both the ASEAN Regional Forum, the principal 'first track' forum, and also in relevant 'second track' forums, particularly the Council for Security Cooperation in Asia-Pacific (CSCAP) and the Pacific Sea Lines of Communication (SLOC) study groups. Similarly, naval cooperation is an essential part of the process of maritime cooperation in matters such as surveillance, maintaining law and order at sea, marine scientific research and shipping safety.

In this broader field of maritime cooperation, it is hard to draw a line between naval activities and the responsibilities of other marine agencies. As this writer has mentioned in another paper on regional naval cooperation,[11] 'the status of the military, higher defence organisations, and the division of responsibility for different maritime activities, are all relevant considerations which are handled very differently from one country to another'.[12] For example, maritime aircraft are operated in some countries by air forces and in others by navies. Furthermore, in many countries, maritime surveillance and search and rescue, are military functions.

The point made by Des Ball in his review of strategic culture in the Asia-Pacific region that 'No ... sharp or formal differentiation between military establishments and their respective civil polities and societies exists in most countries in East and Southeast Asia'[13] is very relevant to how we view the link between naval cooperation and broader maritime cooperation. In a Western nation state, such as Australia, with less integration of the military and society than is encountered generally in the Asia-Pacific region, maritime activities and responsibilities may be more easily put in the military 'box' or the civilian one.

Navies have a clear advantage over the other arms of military service in promoting regional security cooperation, because they do form part of both a defence community and a maritime community. It is well recognised that, in addition to their fundamental war-fighting role, navies also have important constabulary and diplomatic roles to perform in peacetime, including the provision of practical demonstrations of regional cooperation or national contributions to multinational peacekeeping forces.[14] By virtue of the environment in which they operate, navies come with less political baggage attached. Or as Dick Sherwood has described the situation:

> The maritime environment seems to suffer less from the restrictive imperatives of sovereignty that complicate the deployment of ground forces to another country. Experience with coalition building to date has shown that the available maritime forces can be quickly formed, with command and control, ships' disposition, and force operational assignment all modified for the task in hand. When for some national reason, forces from a particular country cannot participate in part of the operation, temporary withdrawal is a much easier task at sea, and is less likely to attract attention and cause political embarrassment.

A wide spectrum of tasks is embraced by the diplomatic or politico-military role of navies. Broadly, the role involves navies being used as instruments of foreign policy, but the manifestation of the role can range from straightforward, rarely controversial activities to support foreign policy objectives, such as regional security cooperation (port visits, and passage exercises, for example) through to manipulative or coercive naval presence missions to influence the political calculations of other states in situations short of conflict.

Multinational naval cooperation to maintain international order, including naval peacekeeping under the auspices of the UN, could be viewed as part of the diplomatic role of navies. However, there is an alternative argument that peacekeeping may fit better under the constabulary role because it involves 'the maintenance of mutually accepted norms, rather than the unilateral coercion implied by traditional naval diplomacy'.[15] Other tasks, possibly suitable for multinational naval cooperation, include peace enforcement, such as a naval blockade to prevent arms from reaching the warring parties, and maritime policing to protect maritime safety and the marine environment.[16]

Naval forces have the theoretical advantages of flexibility, sustainability ambiguity and high political returns at relatively low risk,[17] but these are probably only of academic interest in the Asia-Pacific region for the foreseeable future. There is little interest or commitment in the region to establishing multinational peacekeeping forces, from within the region, to intervene in regional disputes and conflicts. Similarly, while training forces for peacekeeping operations outside the region offers some potential, problems of financing and equipping such forces probably present an insurmountable stumbling-block.[18] It is also significant that, so far, the United Nations has not been 'a large factor in East Asian security thinking, diplomacy and politics'.[19]

REGIONAL SECURITY COOPERATION

The emerging security framework in the Asia-Pacific region has been termed a 'convergent security' strategy, defined as 'a managed transition from a regional security system based predominantly upon bilateral arrangements to a system based increasingly upon more indigenous multilateral arrangements'.[20] Bilateral security relationships with the United States thrived during the Cold War years

but have become increasingly less relevant in recent years, not least because of the increased reluctance of the American electorate 'to support the associated costs of those commitments'.[21]

This upsurge of interest in multilateralism in the Asia-Pacific region in recent years is manifest particularly in the decision of the ASEAN Post-Ministerial Conference in 1993 to sponsor an 18-member ASEAN Regional Forum to discuss Asia-Pacific regional security issues. The inaugural meeting of the ARF was held in Bangkok in 1994 and its second meeting was held in Brunei in August 1995.[22] Confidence and security building has been high on the forum's agenda but so far the emphasis has been 'on generalised, non-confrontational 'trust-building', not concrete problem solving or a specific program of action'.[23] While a 'support group' on CBMs has been established within ARF, 'measures that might serve to actually constrain military forces and operations are not under serious consideration'.[24] CBMs specifically identified at the Brunei meeting of the ARF included:

a. maritime information data bases;

b. cooperative approaches to sea lines of communications, beginning with exchanges of information and training in such areas as search and rescue, piracy and drug control; and

c. establishment of zones of cooperation in areas such as the South China Sea.[25]

The ARF has many supporters and a few critics. The United States and Japan have been particularly frustrated by the current pace and lack of focus, but to some extent this must be appreciated as a manifestation of the 'Asian way' which embodies a slow and tangential approach.[26] One critic of the ARF has suggested ways in which the forum may move beyond just being a 'talking shop'. These are: firstly, multilateral cooperation in external law enforcement and order maintenance, especially in the maritime environment, and secondly, dispute management through the sponsorship of technical and legal research, arbitration, mediation, and negotiation.[27] Again the examples where the latter approach is applicable are primarily maritime.

This move towards multilateral cooperation in the Asia-Pacific region, and the direct support for this move now indicated by the US has some more direct implications for regional naval cooperation. The strategic concepts expounded by the USN in this regard have some important implications for regional navies. These include greater recognition on the part of the US of the need for interoperability and naval cooperation:

> So that in the future we can easily participate fully as part of a formal multinational response or as part of 'ad hoc' coalitions forged to react to short notice crisis situations. Participation in both NATO Standing Naval Forces and in a variety of exercises with the navies, air forces and land forces of coalition partners around the Pacific rim, Norwegian Sea, Arabian Gulf, and Mediterranean basin provide solid foundations for sustaining interoperability with our friends and allies.[28]

This new attention being paid by the US to multilateral security cooperation, at least in strategic rhetoric, is partly a pragmatic response to the changing military balance. As the Malaysian strategic analyst, J.N. Mak has seen it:

> During its heyday as a benign hegemon, the US was not at all enthusiastic about multilateral security, preferring instead to rely on a series of bilateral security relationships in Asia. Today it is beginning to feel less enthusiastic about taking sole responsibility for military leadership in the region.[29]

With a decline in the number of overseas deployed US ground and ground-based air units, 'naval forces increasingly will constitute the US military presence overseas and increasingly will be seen as representative of the entire range of US military power'.[30] This expanding role for the USN in overseas presence suggests the increasing importance and likelihood of multi-national naval cooperation. It also means that regional navies are likely to be caught up more in the process of facilitating US presence missions, both through interoperability and by providing a link to the other national military services, which may be less attuned to US requirements.

SEABORNE TRADE AND SEA LINES OF COMMUNICATION

Seaborne trade, the protection of shipping and the security of SLOCs[31] stand out as common interests of most Asia-Pacific countries, which may lead to naval cooperation becoming more of a reality. In many ways, international maritime commerce is the classical multilateral maritime security interest. Its protection always involves at least two countries (the exporter and the importer), and perhaps a third (the flag State of the ship carrying the cargo). Historically, as we have seen with convoy operations in two world wars, the development of NATO maritime doctrine, and arrangements for the naval control and protection of shipping (NCAPS), maritime commerce has provided the fundamental rationale for multinational naval cooperation. It also provides the most basic demonstration of how a nation's maritime security interests extend beyond its own waters, with, for example, the interest of Japan in the security of SLOCs in Southeast Asian waters.

The particular importance of seaborne trade in East Asia is explained by several factors. Firstly, the regional dependence on shipping stems from the 'archipelagic' nature of the region, which means that all intra-regional trade is carried by sea, except for the very high value cargoes carried by air. Other than within individual countries (notably China), there is no significant land transport infrastructure in East Asia and trade can only be carried by sea and air. Effectively, the region is one large archipelago, with many small islands represented by the region's ports linked to each other by expanses of sea. This characteristic of East Asia provides a sharp contrast to Europe and North America where intra-regional trade is largely carried by road or rail.

Secondly, and accentuating the first factor, economic growth in East Asia is increasingly fuelled by trade and investment between regional economies rather than between Asia-Pacific economies and North American or European ones. For example, between 1989 and 1993, trade between ASEAN countries grew from 16.2 per cent to 18.5 per cent of total ASEAN trade and growth was also evident in ASEAN trade with Japan (from 23.7 per cent of ASEAN trade in 1989 to 24.6 per cent in 1993).[32] These changes in the ASEAN pattern of trade were partly at the expense of trade between ASEAN countries and both Europe and the United States. While trade with those areas continued to increase in absolute terms, it did not grow quite as strongly as intra-regional trade.

Lastly, the importance of seaborne trade in the region is explained by the great and increasing economic interdependence among regional countries. Furthermore, regional nations generally lack self-sufficiency and are variously dependent on imports by sea of energy, foodstuffs, raw materials, and in particular manufactured goods.

Possible threats to regional SLOCs have been identified as arising from maritime territorial disputes (particularly over the Senkaku Islands, the southern Kuriles and the Spratly Islands), piracy, oil spillage and marine pollution, and the coastal state factor.[33] The latter point relates to the fact that East Asian SLOCs generally pass through coastal or archipelagic waters, and are thus vulnerable to coastal state interference as a consequence of national security concerns, domestic instability or local conflict.

As the security of SLOCs is such an important common interest among regional nations, it is an issue which could be both a major basis of maritime cooperation in the region and an important source of regional TBMs. As one leading Korean academic noted, 'SLOCs must be regarded not just as sea lines of communication to be defended in times of hostilities, but sea lines linking all the economies of the Asia-Pacific region'.[34]

MARITIME COOPERATION

The importance of maritime cooperation in the Asia-Pacific region flows from the nature and complexity of the regional maritime environment and the propensity for illegal activities and disputes at sea. We are far from achieving the stable maritime regime mentioned earlier in this paper, with many examples of disputed claims to sovereignty in the region, unresolved maritime boundaries, potentially restrictive interpretations of freedoms of navigation, widespread illegal fishing, illegal population movements, drug smuggling, and frequent occurrences of piracy in several areas.[35]

In many ways this apparent maritime 'disorder' is a consequence of the geographical nature of the East Asia region in particular with a series of enclosed or semi-enclosed seas between the Asian mainland and the off-lying chain of islands stretching from the Kuriles, north of Japan, through to the Indonesian archipelago and northern Australia. The situation is then further complicated by the numbers of groups of island within these seas, such as the Senkaku, Paracel and Spratly Islands, which are the subject of sovereignty disputes. Achieving straight line maritime boundaries and clear sovereign jurisdiction over maritime areas in such a region is an extraordinarily difficult task.

Countries can rarely take a truly independent, national view either of their maritime security interests or of the problems that can arise from their uses of the seas. The maritime environment is basically an international one. Relevant concerns follow no national boundaries. Nations have to talk about and agree on issues such as the principles of the Law of the Sea, the prevention of marine pollution, the conservation of fish stocks, the safety and security of shipping, the delimitation of maritime boundaries, the monitoring of sea levels, and the responsible development of the mineral resources which may lie on or under the seabed. A stable maritime regime requires comprehensive dialogue and cooperation among regional nations on the specific matters of common concern in the maritime environment.[36]

In implementing policies on maritime issues, nations have to take into account the interests and rights of their neighbours, as well as those of other countries, who legitimately send ships into and through their waters. This is all part of the general worldwide trend towards a greater focus on marine affairs and the planning and management of national uses of the sea 'oceans management', as well as increased concern for the health of the world's oceans.

The concept of ocean management has developed in response to the jurisdictional revolution in the law of the sea reflected in the 1982 UN Convention on the Law of the Sea, the expansion of economic activities at sea, and increasing concern over conflicts of interest between the various uses of sea areas, including

navigation, fishing, mining, dumping and recreational uses and the possible implications for environmental quality. The preamble to the LOSC stresses the importance of coordinated policies by recognising 'that the problems and opportunities of ocean space are closely interrelated and need to be considered as a whole'.[37] Several articles of the LOSC go on to point out a requirement for regional cooperation (Article 276, for example, calls for the establishment of regional marine scientific and technological research centres and Article 277 describes the functions of such centres).

The 1982 LOSC exhorts states bordering an enclosed or semi-enclosed sea to cooperate with each other. Theoretically this process of cooperation is institutionalised in the Regional Seas Program of the United Nations Environment Program (UNEP). This was originally established in 1974 as a global program for the protection of the marine environment and the management of marine and coastal resources. In theory it provides a framework for regional consultation on the comprehensive and integrated management of marine and coastal areas, including the development of action plans to handle the problems of the marine environment, but in practice it has only had marginal success so far.

Although thirteen Regional Seas Programs have now been established worldwide, including four in the Asia-Pacific region, outcomes have been largely in the field of training and education. The full benefits of the program, in terms of meaningful cooperation, have not yet been realised. These are dependent on the political commitment of participating countries and the availability of an effective delivery mechanism to manage the action plan. To some extent this has been achieved in the South Pacific with South Pacific Regional Environment Program (SPREP) but the other programs in Asia- Pacific (the East Asian Seas, the North-West Pacific and South Asian Seas) have not yet reached agreement on action plans.

The development of the resource potential of regional seas must be facilitated by cooperation between regional countries if we are to avoid the 'tragedy of the commons' wherein, by pursuing individual goals in an activity of common interest, all participants lose. The possible existence of rich reserves of hydrocarbons is often quoted as justification for the disputed claims to the Spratly Islands and has provided the catalyst for the several joint development agreements in the Asia-Pacific region, covering marine areas where maritime boundaries have not been agreed.[38] The management of the living resources of the East Asian seas is a concern not only of regional nations but also has extra-regional dimensions with tuna stocks, for example, migrating between the South China Sea and the South Pacific.[39] The southern bluefin tuna also spawns South of Java before migrating to Southern Australian and New Zealand waters, and on to the South Atlantic.

The *Asian Defence Journal* recently drew attention to the importance of maritime cooperation in an article on regional maritime issues:

> If discord is to be avoided in order that collaboration can enhance peace and security, there will be a great need for cooperation and coordination in terms of ocean use, maritime exploration and exploitation (in marine resources, mineral extraction, fisheries), merchant marine activities (including freight conferences), maritime industries (shipbuilding and related services) and even marine leisure activity coordination.[40]

The same article went on to refer to the activities of regional marine institutes and the benefits of networking:

> Some headway has already been possible in exploring these various activities through the work of maritime-related institutes such as the Southeast Asian program on ocean law and management (SEAPOL) program at Chulalongkorn University in Thailand, the Malaysian Institute of Maritime Affairs (MIMA), and the Centre for Maritime Policy at the University of Wollongong in Australia. These are definitely excellent efforts and whilst networking is in process, there is still an imperative to enhance, magnify and consolidate region-wide efforts at collaboration in order that these may transcend national priorities.[41]

Regional navies have a clear role to play in establishing good order at sea with the free and uninterrupted flow of seaborne trade, and allowing nations to pursue their sovereign maritime interests and manage their maritime resources, in a manner which is agreed and accepted by their neighbours and other legitimate users of their waters. Cooperation between regional navies will contribute to this outcome, and conversely, regional naval cooperation will be facilitated by emphasising this role of navies.

REGIONAL FORUMS

Matters related to naval and maritime cooperation are discussed in several regional forums, including the ARF and the Asia Pacific Economic Cooperation forum. The major forum specifically for naval dialogue is provided by the Western Pacific Naval Symposium. The first WPNS meeting was held in Sydney in 1988 and this has been followed by meetings at two yearly intervals – in Bangkok in 1990, in Honolulu in 1992 and in Penang in 1994. The WPNS brings together leaders from the navies of the Western Pacific to discuss issues of common concern, including law of the sea and SLOC security. Its membership comprises the navies of the ASEAN countries, Japan, Papua New Guinea, China, Republic of Korea, Australia, New Zealand, and the United States. The Penang

meeting agreed to extend full membership status to France (on receipt of an appropriate application) in view of French Territory in the South Pacific, but observer status only to Canada and Chile – two countries which had expressed interest in joining the WPNS.[42]

The main thrust of the WPNS has not been multilateral naval operations, which would be too sensitive,[43] but the harmonisation of existing procedures. A tangible outcome from the WPNS meetings has been a series of subordinate workshops which have led to the development of a Maritime Information Exchange Directory, a WPNS Tactical Signals Handbook, a WPNS Replenishment at Sea Handbook and planning for the conduct of a Command Post Exercise (CPX) to help the development of common doctrine and publications.[44]

Some indications emerged from the Penang meeting of the WPNS that the forum could be 'running out of steam'. It is limited by its 'first track' nature and the inherent conservatism of naval forces which, together, result in a tendency to see all issues from a 'micro' national perspective only, and an understandable reluctance to do much more than talk without the appropriate clearances. In particular, 'There were no proponents of a regional view' at the Penang meeting,[45] which would have helped extend the process of naval cooperation both geographically and functionally, particularly to northeast Asia where, as has been noted, maritime cooperation is still relatively underdeveloped.

The prospects for extending the current scope of naval cooperation would probably be enhanced by establishing links between the WPNS and the other forums in which matters of naval and maritime cooperation are discussed, including relevant 'second track' activities. Clearly, the WPNS needs to keep up with the developments in ARF and other forums.

CSCAP is the main contemporary example of institutionalised 'second track' dialogue involving Asia-Pacific nations. CSCAP is designed to focus the research activities of non-governmental agencies working on security issues in the Asia-Pacific region and to provide linkage between these activities and official regional security cooperation processes.[46]

Of relevance here, CSCAP has established a working group to look specifically at maritime security cooperation in the Asia-Pacific region. This group has adopted a broad view of security and is taking onboard a range of 'small s' security issues, such as marine safety, resources conservation, coastal zone management and unlawful activities at sea – including drug smuggling, illegal population movements and piracy, as well as more conventional maritime security issues.[47] These maritime activities are regarded as excellent vehicles for developing the habit of cooperation and the concept of common security in the region. The first meeting of the CSCAP Maritime Cooperation Working Group, held in Kuala Lumpur in June 1995, agreed to look more closely at matters related to regional

naval cooperation at its next meeting, probably to be held in Kuala Lumpur in April 1996.[48]

During the 1980s a series of conferences on the security of SLOCs was held around the region.[49] These conferences were hosted, in most cases, by a non-government organisation in the host nation. The fundamental rationale of these conferences appears to have been the problem of resupply of Northeast Asia in the event of confrontation between the superpowers. Key participants in the initial round of conferences were the United States, Japan, Taiwan and South Korea, with the ASEAN countries, Australia and New Zealand subsequently becoming involved.

At the SLOC conference held in Bali in 1993, a clear shift in emphasis was apparent, from concern with the oceanic protection of shipping typical of the Cold War years, to a greater focus on focal areas, straits transit issues and broader problems of the safety of merchant shipping. This was largely driven by the ASEAN participants who have become more sensitive about the transit of foreign vessels through their archipelagic and territorial waters. The most recent SLOC conference, in Kuala Lumpur in August 1994, hosted by the Government-sponsored Malaysian Institute for Maritime Affairs, had a similar emphasis on marine safety and traffic management issues. The next SLOC conference is to be held in Taipei in January 1996.

Cooperative aspects of the management of shipping and ports and related issues are also covered by the Transportation Working group of APEC. The sixth meeting of this group held in Bali in September 1994 included a one day seminar on port management and electronic data interchange (EDI) with sessions on port ownership, facilitation of cargo and cargo handling, port pricing policy and blue water management; that is, vessel traffic systems, pilotage and towage, port design and training simulators.

CONCLUSION

The main conundrum of regional security at present is that despite all the rhetoric about peace and security, and cooperation and dialogue, military capabilities in the region, especially maritime capabilities, are growing quickly. Naval planners, whether they are in Tokyo, Seoul, Taipei, or Bangkok, can write perfectly good strategic justification for ships, aircraft and submarines, in full knowledge that the financial resources are likely to be available for their acquisition. The aim should be to break this 'vicious circle' of cause and effect, and to build a regional security environment in which justification is not available for new capabilities. Cooperation among regional navies will help in achieving this outcome. Thus, it could be

said that regional naval officers have a great opportunity with naval cooperation to work themselves out of a job.

A clear trend, apparent in the Asia-Pacific region, is that economic growth involves greater use of the seas and increased awareness of the importance of maritime interests. These considerations highlight the importance of maritime cooperation, both in a 'micro' sense with issues such as marine safety and the reduction of marine pollution, and in a 'macro' sense with comprehensive oceans management and the need to resolve conflicts which can arise both between countries and between different uses of the sea. It is encouraging that dialogue and cooperation on these issues is now taking place in Asia-Pacific, in many different forums and many different contexts. The navies of the region have a key role to play in this process of maritime cooperation, but to do it requires of them a broad and imaginative regional view rather than a narrow, national perspective.

Overall, generalisation about the prospects for naval cooperation in the Asia-Pacific region is difficult as we move to the end of this century and into the next. The practice of cooperation is well established in the South Pacific and some progress is occurring in Southeast Asia, although there may be a ceiling in the short term to just what is possible. Northeast Asia is much more of a problem. Mark Valencia has made the important point that in northeast Asia, ocean management issues and conflicts can be turned into opportunities for building confidence, dampening frontier tension and improving relations in a region so vital to world peace and prosperity.[50]

FIGURE 1

NAVAL AND MARITIME COOPERATION

NAVAL COOPERATION
- EXERCISES
- PEACEKEEPING
- MARINE SCIENTIFIC
- SOVEREIGNTY PROTECTION
- STANDING FORCES
- MCM
- SAR
- DISASTER RELIEF
- DATA BASES

COOPERATION
- LIVING RESOURCES
- SURVEILLANCE
- LAW AND ORDER
- NON-LIVING RESOURCES
- SLOC PROTECTION
- MARINE SAFETY
- COASTAL ZONE

RESEARCH
MANAGEMENT
- MARINE ENVIRONMENTAL PROTECTION
- ECOLOGICALLY SUSTAINABLE DEVELOPMENT

Notes

1. Gareth Evans and Paul Dibb, *Australian Paper on Practical Proposals for Security Cooperation in the Asia-Pacific Region.* Canberra: Department of Foreign Affairs and Trade, 1994, p. 10.
2. *ibid.*, p. 4.
3. Pauline Kerr, 'The Security Dialogue in Asia-Pacific', *The Pacific Review.* Vol. 6, No. 4, 1994, p. 404.
4. Zara Dian, 'Maritime Issues in Asia' *Asian Defence Journal.* 6/95 June 1995, p. 6.
5. Michael Leifer, 'The Maritime Regime and Regional Security in East Asia', *The Pacific Review.* Vol. 4, No.2, 1991, p. 128.
6. Possible naval cooperative measures have been listed and discussed in a great number of published sources, including for example; Commodore Sam Bateman RAN, *Prospects for Dialogue and Cooperation Between Asia / Pacific Navies: Working Paper No. 127.* Canberra: Peace Research Centre, Research School of Pacific Studies, Australian National University, 1993; Russ Swinnerton, 'Confidence Building Measures at Sea: the Challenges Ahead in Southeast Asia', *The Pacific Review.* Vol.8, No.2, 1995, p. 328; Captain Russ Swinnerton RAN and Desmond Ball, 'A Regional Regime for Maritime Surveillance, Safety and Information Exchange', *Maritime Studies.* 78, September/October 1994, pp. 1-17; and Charles A. Meconis and Commander Stanley B. Weeks USN (Rtd), *Cooperative Maritime Security in the Asia-Pacific Region: A Strategic and Arms Control Assessment,* Seattle: Institute for Global Security Studies, 1995.
7. This includes reviews such as that conducted by Malaysia in Penang in 1990 with 63 warships from 18 different countries . R. Satchi, 'The RMN's International Royal Fleet Review', *Asian Defence Journal.* 5/90 May 1990, pp. 18-21.
8. Commander Dick Sherwood RAN, 'Strengthening Maritime Security in the South Pacific', a paper presented to the Eighth Asia-Pacific Roundtable, Kuala Lumpur, 6-8 June 1994, reprinted in G.A. Cox, (ed) *Issues in Maritime Strategy.* Canberra: RAN Maritime Studies Program, 1994, pp. 97-111.
9. Eric Grove, 'Maritime Confidence and Security Building Measures', a paper presented to the first meeting of *The CSCAP Maritime Working Group.* Kuala Lumpur, 2-3 June 1995, p. 2.
10. Mark J. Valencia, 'Maritime Regime Building in Northeast Asia: the Example of the Environment', a paper presented to the 28th annual conference of *The Law of the Sea Institute,* Honolulu, Hawaii, 11-14 July 1994, p. 1.
11. Bateman, 'Prospects for Dialogue', *op. cit.*
12. *ibid.*, p. 7.
13. Desmond Ball, *Strategic Culture in the Asia-Pacific Region (With Some Implications for Regional Security Cooperation): Working Paper No. 270.* Canberra: Strategic and Defence Studies Centre, Research School of Pacific Studies, Australian National University, 1993.
14. For a good, contemporary description of the peacetime utility of a navy, see Dick Sherwood, *The Navy and National Security: the Peacetime Dimension,* Canberra Papers on Strategy and Defence No. 109, Canberra: Strategic and Defence Studies Centre, Research School of Pacific Studies, Australian National University, 1994.
15. Michael Pugh, Jeremy Ginifer and Eric Grove, 'Sea Power, security and peacekeeping after the Cold War', Michael Pugh, (ed) *Maritime Security and Peacekeeping – A Framework for United Nations Operations.* Manchester: Manchester University Press, 1994, p. 23.
16. Michael C. Pugh, 'Multinational Naval Cooperation', *US Naval Institute Proceedings.* March 1994, pp. 72-74
17. Sam Bateman, 'Maritime Cooperation and Dialogue', Dick Sherwood, (ed) *Maritime Power in the China Seas,* pp. 149-150.
18. James L. Lacy, *Stonework or Sandcastle? Asia's Regional Security Forum.* Alexandria, VA: Institute for Defense Analyses, July 1995, pp. 26-27.
19. William T. Tow, 'Contending Security Approaches in the Asia-Pacific Region', *Security Studies.* Vol.3, No.1, Autumn 1993, p. 75.
20. Lacy, *op. cit.*, p. 7.
21. *ibid.*, p. 76.
22. The participants in the ARF are; Australia, Brunei, Cambodia (joined in 1995), Canada, China, European Union, Indonesia, Japan, Laos, Malaysia, New Zealand, Papua New Guinea, Philippines, Russia, Singapore, South Korea, Thailand, United States and Vietnam.
23. Lacy, *op. cit.*, p. S-1.
24. *ibid.*, p. 26.
25. Chairman's statement of *The Second ASEAN Regional Forum (ARF).* Bandar Seri Begawan, 1 August 1995. Annex B.
26. Lacy, *op. cit.*, p. 29.
27. *ibid.*, pp. 41-42.
28. John H. Dalton, Admiral Jeremy M. Boorda and General Carl E. Mundy, 'Forward...from the Sea', *US Naval Institute Proceedings.* December 1994, p. 46.
29. J.N. Mak, 'The ASEAN naval build-up: implications for the regional order', *The Pacific Review.* Vol.8, No.2, 1995, p. 312.
30. Admiral William A. Owens, 'Naval Voyage to an Uncharted World', *US Naval Institute Proceedings.* December 1994, p. 31.
31. On the issue of terminology I prefer sea **lines** of communication (SLOCs) rather than the alternative, sea **lanes** of communication, because sea lanes have a distinctive meaning in the law of the sea, particularly with archipelagic sea lanes and routing systems. While it is acceptable to speak of the security of SLOCs, it must also be remembered that, in operational terms, it is ships which are defended and not lines in the ocean.
32. Department of Foreign Affairs and Trade, *The APEC Region Trade and Investment.* Canberra: November 1994. Table 2.2, p. 27.
33. Seo-Hang Lee, 'Security of SLOCs in the Western Pacific' a paper presented to the *Workshop on Regional Maritime Cooperation – Shipping and Seaborne Trade: Common Interests of Australia and the Republic of Korea. University of Wollongong,* 14-15 September 1995.
34. Professor Dalchoong Kim, 'Maritime Policy and Security and Ocean Diplomacy in a New World Order: Major Tasks for the 21st Century', Keynote speech to the *Conference on Marine Policy, Maritime Security and Ocean Diplomacy in the Asia-Pacific,* Seoul: 7-8 September 1994, p. 8.
35. Indonesian waters and the Hong Kong-Luzon-Hainan area continue to experience a high incidence of piratical attacks. *International Maritime Bureau Piracy Up-date (1 Jan-16 Aug 1995),* Kuala Lumpur: IMB-Regional Piracy Centre, 16 August 1995.

36. For a discussion of specific issues of concern, see Sam Bateman, 'Maritime Cooperation and Dialogue', *op. cit.*, pp. 145-148.
37. United Nations, *Convention on the Law of the Sea*, New York: United Nations, 1983, p. 1.
38. These include the Timor Gap Treaty between Australia and Indonesia, the joint development area agreed between Malaysia and Thailand in the Gulf of Thailand and a Japan-Korea Joint Development Zone in the East China Sea.
39. This common interest of ASEAN and the Pacific Island nations is managed through the Western Pacific Fisheries Consultative Committee (WPFCC) established in 1989 under the auspices of the Pacific Economic Cooperaton Council (PECC).
40. Dian, *op. cit.*, p. 6.
41. *ibid.*
42. CDR Mat Taib Bin Yassin, LCDR Azhari Bin Abd Razak, LCDR Zulkifli Bin Abu Bakar, et al. (eds and compilers), *Fourth Western Pacific Naval Symposium, Summary of Proceedings.*
43. For a discussion of the issues which inhibit multinational cooperation in the Western Pacific, see Sam Bateman, 'Build a Westpac Naval Alliance', *US Naval Institute Proceedings,* January 1993, pp. 77-82.
44. For a fuller discussion of the activities of the WPNS see Sherwood, *The Navy and National Security,* pp. 61-64.
45. Report by Captain Russ Swinnerton, RAN on the Fourth WPNS to CSCAP Australia.
46. For more information on CSCAP see Desmond Ball, 'The Council for Security Cooperation in the Asia Pacific (CSCAP)', *The Indonesian Quarterly, Vol. XXI,* No.4, Fourth Quarter, 1993, pp. 495-505.
47. The first meeting of the CSCAP Maritime Cooperation Working Group was held in Kuala Lumpur in June 1995.
48. Sam Bateman, 'Maritime Security Cooperation Working Group Report', *CSCAP Newsletter No.3,* August 1995. Kuala Lumpur: CSCAP Secretariat, 1995, p. 7.
49. The Hon. Shin Kanemaru, 'Foreword' in M.J. Kennedy and M.J. O'Connor, *Safely by Sea,* Lanham Md: University Press of America, 1990, p. ix.
50. Valencia, *op. cit.*, p. 6.

18 The JPV: A Case Study in Exploring Common Maritime Interests

GEOFF WALPOLE

AT the outset there is a need to eliminate confusion over the terminology for the Joint Patrol Vessels (JPV) both within the Department of Defence and particularly within the defence industry press. In this brief chapter the term will refer to the product of the project based on a joint detailed operational requirement developed by Malaysia and Australia. The 'PV' patrol vessel, is the product of the Royal Malaysian Navy's (RMN) project to replace its aging patrol vessels, and the 'OPC' is an offshore patrol combatant destined to meet Australia's needs. The product of the JPV project will largely satisfy the requirements of both the 'PV' and 'OPC' projects.

THE GENESIS OF THE COMMON REQUIREMENT

Prior to April 1992, and particularly as part of the Australian Defence Force Structure Review, plans were being progressed in Headquarters Australian Defence Force (HQADF) for a vessel with a combat capability; capable of carrying out the surface surveillance tasks currently conducted by the Fremantle Class patrol boats, but which would also have a role in time of conflict. The vessel was to be at least 55 metres in length, and it was expected to have some kind of aviation capability, although at that time the hope was that it could be provided by a UAV.

Coincidentally, the Royal Malaysian Navy was well advanced towards producing a staff requirement for a replacement for the 'Kris' Class of patrol vessels. One had recently been lost at sea with some loss of life. While the Malaysians' primary requirement was for a vessel for peace time surveillance, they too felt that their new PV should be able to take its place in their order of battle during any conflict. For the surveillance role they also had an aviation requirement, but had not been seduced by the fantasies of the unmanned aerial vehicle developers.

In April 1992, the then Malaysian Defence Minister, Najib, undertook a tour of the Transfield shipbuilding facility at Williamstown in Victoria, with

Australia's Minister for Defence. In conversation Minister Najib suggested to Senator Ray that Malaysia would be amenable to an Australian bid, albeit a late one, to take part in their PV program, which by that time had reached the registration of interest phase. Of particular interest to the two ministers was the potential for a collaborative program, with industrial and technological development similar to that which had occurred in Australia and New Zealand with the ANZAC ship program.

Transfield's management was quick to assess the situation and put together a proposal. Meanwhile, between April and August of 1992, the RAN examined its Offshore Patrol Combatant program during extensive departmental discussions. These discussions tried to assess the impact of advancement of the program to accommodate the Malaysian requirement for early replacement of their PVs. In September of that year, 1992, the Assistant Chief of Defence Force for Development (ACDEV) and a small team visited Malaysia to explore further the scope for collaborative acquisition. Discussions confirmed that there were sufficient similarities in individual operational requirements to justify a joint study, aimed at developing a common operational requirement.

During these discussions the Royal Malaysian Navy provided Australia with a copy of its requirement documentation which confirmed that the requirements of both countries were similar. The major difference was size: the Malaysians were aiming for an 85 metre vessel, while the RAN believed that it needed a vessel of about 55 metres. There was also a difference of view over the aviation capability, with Malaysia seeking a helicopter, while the RAN seemed to want an unmanned aerial vehicle.

After much more work by both parties a study project was established, under the auspices of the Malaysia Australia Joint Defence Program (MAJDP) to investigate options for a collaborative project for the acquisition of patrol vessels. In January 1993, Malaysia advised its willingness to develop further a RMN/ADF Joint Patrol Vessel project under the Malaysia Australia Joint Defence Program, and each nation formed a study team, with work being done alternately in each country and involving both parties.

By June 1993, the two countries had agreed at the working level to a joint requirement, and had begun work on a joint detailed operational requirement. The Australian Department of Defence Concepts and Capabilities Committee (CCC) also in June 1993, agreed to the proposed levels of capability as a suitable basis for planning for Australia. It also noted that the capability level represented by the joint Total Logistic Requirement lay largely within the range of capabilities being considered for independent acquisition of an OPC.

After completion of a Joint Development Operational Requirement (JDOR) which was agreed at the working level by both parties, the document was endorsed

by the Malaysian Chief of Navy. In November 1993 the Australian OPC project was considered by the Australian Department of Defence Force Structure Programming and Priorities Committee (FSPPC) which essentially endorsed the requirement for Australia. Perhaps the most significant outcome of that meeting was a finding by the committee, independent of advice from HQADF, that the Australian OPC *whether or not it eventuated as a joint project*, was to have an intermediate sized helicopter for surface surveillance.

This finding, which meant that the Australian vessel was likely to have a minimum length close to 80 metres, to cater for the flight deck, essentially removed the major difference between the two national requirements. But the decision was not made to achieve that end – the requirement for the Australian OPC to carry an intermediate helicopter was mandated by the FSPPC as a result of analysis conducted by the Analytical Studies Group of Force Development and Analysis Division.

Since then, the ADF has worked closely with Transfield to ensure that the design is compliant with the JDOR. While at no stage has the ADF *represented* Malaysia's interests, it has ensured that the design remains representative of the capability called for in the jointly agreed requirements document. Australia has made no unilateral decisions which would affect Malaysia's interests and the ADF has ensured that Malaysia's interests have been put before the designer during discussions.

SIMILAR NATIONAL OBJECTIVES

The basis for all this work, and indeed for the very existence of the joint project, has been the recognition by the political leaders of both nations that the two countries have similar interests and goals. A considerable amount of national will has been shown by both parties. They have recognised the likely benefits which will arise from collaboration to design and build vessels which will spend a large proportion of their lives operating in a similar sea-going environment – that is, the harsh tropical ocean environment which envelops Malaysia and the northern half of Australia.

Both Australia and Malaysia, while inarguably at different stages of economic development, have markedly similar national objectives. Both nations aim to achieve economic growth and stability through industrial growth, biased towards the higher technology 'value added' end of the industrial spectrum – particularly in the manufacturing and electronics fields.

Malaysia's goal is quite clear: it aims to become a fully developed first-world country by the year 2020. Consequently, it needs a significant shift from a

substantially rural economy and dependence on export of raw materials, to the development of high technology industries capable of competing successfully on the world market. Australia's vision, while possibly less well articulated, is similar.

This goal of high-end industrialisation is not achieved by spending money overseas. Even though in some circumstances local construction may attract a cost premium, it does force domestic industry to produce the high-technology equipment needed by the defence force. Over the years – commencing with the F/A-18 project and continuing with the Collins and ANZAC programs – Australia has learned how to do this, thus helping to make the collaborative JPV project so attractive to Malaysia.

For an industry program to be successful, the ADF needs know exactly what it wants and needs from it. Only experience will reveal, for example, how to ensure that the required transfer of technology takes place. Australia has learned a lot in this regard by its mistakes. Now, there is an expectation that Australia will pass on the appropriate lessons to Malaysia, thereby allowing it to make a more rapid progression to the industrialised status which it desires.

Both countries in this proposed joint program see the need for the development of strategic alliances. Although at different stages of development, both seek alliances, commercial and military, with other countries of the region, to ensure continued political stability and to promote continued economic growth. Both Australia and Malaysia depend on seaborne trade for continued economic growth, and on the maintenance of open trade routes or sea lines of communication, many of which pass through the archipelagic waters of Southeast Asia.

Both nations also need to be able to protect their national resources and sovereignty. Although the strategic outlook for both countries is essentially benign, and is likely to remain so for the foreseeable future, disputes over EEZ boundaries, or illegal activities, including fishing and migration, could arise at relatively short notice and escalate into limited armed conflict with little warning.

Australia and Malaysia also need to spend limited defence funds wisely. While the following figures should be regarded as indicative only, for a collaborative build of 12 ships for Australia in Australia, and 12 ships in Malaysia for Malaysia, the reduction in the capital cost of acquisition would be about six percent for each customer, over the same order with no collaboration. Similarly, full collaboration for through-life support of the same number of vessels for each country would result in a saving of 16 percent over the life of the ships. That is to say, savings of hundreds of millions of dollars and ringgit would accrue to the respective parties. Those figures would reduce with any deviations from commonality of design, but they provide a powerful argument for collaboration, where common objectives can be identified.

SIMILAR OPERATING CONDITIONS

Both Australia and Malaysia have extensive exclusive economic zones, rich and potentially richer in minerals, oil and other natural resources. Australia's has a coastline extending some 12,000 nautical miles and outlying territories remote from the mainland. Malaysia also has an extensive coast line, with the added dimension that East Malaysia-Sabah and Sarawak, a significant part of the country – is separated from peninsular Malaysia by some 500 nautical miles across the South China Sea.

Both countries share EEZ borders with other countries, and these could be the likely sources of dispute or conflict over resources, particularly those which are migratory, such as fish, or those such as gas and oil which can be found to extend on both sides of a common boundary. These common boundaries for Australia are in the north, and for Malaysia include boundaries with Australia's nearest northern neighbours.

Malaysia and Australia are also inescapably part of the Asia-Pacific region and to varying degrees share similar problems such as illegal immigration, drug trafficking and piracy. Environmental factors such as temperature, humidity, sea state and weather patterns, which can affect operations, are very similar for each country and play an important role in ship design and equipment selection.

These factors again make it so sensible to collaborate, on both design and manufacture. Patrol vessels designed for other parts of the world are simply not suited for operations in this region. Ventilation systems invariably are inadequate, sea-keeping qualities are less than ideal, range is less than desirable, fresh water-making and storage capacity are meagre and aviation fuel stowage is less than necessary for the long periods between replenishment ports. In producing a collaborative design these, and many more factors, have been taken into account and have resulted in what will be a first class vessel, ideally suited for use throughout our region. While it will be perfectly suited to the operating philosophies of the Malaysian and Australian navies, there is no reason why it would not be very suitable for export to others, with little or no design modification necessary.

MISSION

The primary mission of the JPVs will be to contribute to the achievement of national objectives, both in peacetime and in time of conflict. Establishment of a collaborative project to build patrol combatants in each country, to an essentially similar design, will develop and strengthen the strategic alliances and links between Australian and Malaysian industry. It will also build on the already

strong defence links, as well as helping to support stable diplomatic and political ties.

The project will establish and develop high technology industries in each country through technology transfer, particularly to Malaysia. For Australia, the JPVs will promote regional and world acceptance of our industrial competence, through export of technologically advanced products able to compete successfully in the world market. Quite simply, there is scope for the Australian warship building industry to become established as a recognised source of supply for the region. And that is in Australia's national interests.

In times of peace, the JPVs will provide a cost-effective means of developing the established military links through joint operations and exercises, joint training and shared maintenance and support facilities. Both nations, and any other customers, will use them to monitor and control activities in national waters including their respective exclusive resource zones. They will be used for providing a presence in national waters to deter activities such as illegal fishing, and will provide an effective means of responding to such illegal activities and of enforcing sovereignty. They will also contribute to the conduct of other national responsibilities such as environmental data collection, disaster relief, medical evacuation and search and rescue.

But nations do not, or at least should not, structure their defence forces for peace time roles. In periods of tension or conflict, JPVs will provide an effective contribution to defensive operations. They will be able to operate as part of a wider defensive effort in support of more capable military units, and will be able to operate alone to undertake reconnaissance and surveillance tasks. They will have the capabilities to escort and protect coastal shipping, as well as to protect offshore resources and infrastructure; including the defence of ports, anchorages and likely points of entry; and limited support of land based operations.

PERFORMANCE

The joint patrol vessels will be optimised for sustained and economical patrol, response, surveillance and defensive operations in the waters of Australia and Malaysia; particularly in the more navigationally hazardous inshore and island areas. Their sea-keeping characteristics, range, endurance and speed will enable them to operate effectively for long periods of time in areas remote from logistics and other support.

Ships' systems, including surveillance, combat and weapon Systems, and command, control and communications arrangements, will be sufficiently capable to allow the JPVs to integrate with higher capability platforms. Likewise, they

will be able to contribute to combat operations as part of a larger force, and to undertake peacetime surveillance, response and sovereignty protection tasks.

The principal characteristics of the JPV, reflected in the performance specifications developed jointly by Australia and Malaysia, will enable the vessels cost-effectively to contribute to the national objectives of both prospective partners. They include the ability to conduct unrestricted operation of all sensors and equipment in sea and weather conditions most likely to be encountered in the intended areas of operation. Security restrictions prevent the performance characteristics being quantified, at least at this stage. Nevertheless, the broad particulars of the joint patrol vessels include a length of about 80 metres overall, a displacement of around 1300 tonnes, a maximum speed of greater than 25 knots, and a range in excess of 6,000 nautical miles.

The ships will be fitted with a weapon and sensor suite to ensure that, while they will not necessarily look for trouble, they will have the ability to defend themselves against credible levels of threat. For Australia, this is likely to mean inclusion of a surface to air missile system, an active missile decoy and a medium range gun, controlled by modern sensors and fire control systems, coupled by a modern open architecture command and control system. The communications system will be fully integrated and based on advanced commercially available architectures.

The ships' systems and equipment will be optimised for sustained operations, and civil build standards will be used wherever these do not compromise survivability, combat capability or the operational role. Signatures will be reduced in a common sense way, by incorporating design features which will eliminate problem areas such as corner reflectors in the superstructure, or hot spots from exhaust ducts close to steel ships' sides.

Crew numbers will be kept to the absolute minimum, by incorporation of extensive automation remote monitoring, but there will be a large number of excess bunks to cater for trainees and other people who might be embarked to meet various needs of both navies. There will be provision for mixed gender crewing, even for Malaysia, and there will be compliance with all the relevant international standards such as safety of life at sea (SOLAS) and IMO regulations.

SUMMARY

Although at different stages of development, Australia and Malaysia have similar national goals and aspirations. The navies of the two countries operate in different areas but in waters with similar characteristics and in similar climatic conditions.

Each has an operational requirement which calls for the production of a number of patrol combatants in similar time scales.

A considerable amount of will at the political and defence management levels in both countries has resulted in a program which provides the opportunity for each of the navies to collaborate in the production of a purpose designed vessel, which will suit the needs of both nations. This has been achieved by an enormous amount of good will and cooperative spirit at the working level.

The present product of all this work is a design for a joint patrol vessel with capabilities closely matched to its mission.

19 Barriers to Maritime Cooperation

B.A. HAMZAH

SOMETIMES I wonder if I am the right person to be asked to write on the subject of barriers to naval cooperation. Undoubtedly, there are many naval officers who are much more informed on the subject. Nevertheless, I am aware that the days of 'the free lunch' are over.

I will continue from where Commodore Sam Bateman's contribution ended, because he has established very strong rationales and parameters for maritime cooperation. So, my task has been made very much easier. Much has been written about these barriers to naval cooperation in the Asia-Pacific region, especially during the Cold War period. The emphasis has always been to examine the area's threats in relation to big power politics. Underlying this level of cooperation there has always been big power politics. One would have thought that, with the subsidence of military threat and the demise of the Cold War, cooperation among navies would have improved. On the contrary, except in certain regions, cooperation has remained at almost the same level maintained before the Cold War ended. More distressing are the signs of renewed military buildup, particularly among the navies of the Far East, a point which has been made earlier in this volume.

THE PROBLEM OF DEFINITION

Amidst efforts for confidence building measures, such problems in international relations are fuelled by economic disparities. And, faced by considerable uncertainties, especially at sea, many nations are now rearming their navies and in a real way ideology is less discerning than it used to be in the Cold War period. I think the first barrier to greater naval cooperation is definitional – how to define what greater naval cooperation is all about. What kinds of naval cooperation are we talking about? What is the accepted level of naval cooperation and what forms is it to take? What spectrums of naval cooperation are we going to deal with? Will these be just exchanges or visits, courtesy calls, joint training and joint exercises or exchanges of information and intelligence or exchanges of staff? Or is there a

need, for example, to distinguish cooperation between allies and treaty parties and non-allies and non-treaty parties?

It is important that we overcome the definitional problem. One must accept that the level of cooperation between allies must be somewhat higher and would involve cooperation in slightly more sensitive areas. The cooperative relationship between two parties, therefore, involved in a straightforward technology swap or transfer or arms purchase, would probably be dictated by different sets of considerations. The parameters of cooperation will very likely take into account an 'after sales' relation of purely technical cooperation, involving training in the use and maintenance of the particular technology. Such cooperation, in most likely to be technology specific. A case in point would be the training provided by Russia to the Royal Malaysian Air Force, following purchase of the MiG 29. But, on the other hand, Malaysia, under the Five Power Defence Arrangements, has agreed to different levels of cooperation because we see the difference between the two circumstances.

THE LOSS OF THE THREAT

The receding of the military threat has confounded the cooperation between navies in the region, especially among those which had premised cooperation on the basis of threat alone. Furthermore, the lack of regional homogeneity generates a variety of security perceptions, different security dilemmas and a lack of congruence in approaches. The bipolar world made naval cooperation much simpler, because countries then knew with whom they had to cooperate, why cooperation was required and what was the purpose of this cooperation. All other things being equal, the final reason for naval cooperation was operational readiness for defence and the need to rationalise standard operating procedures, within disparate commands as well as units.

But, in the much more diffuse multi-polar world and in the absence of a well defined common enemy, naval cooperation has had to adopt a slightly different agenda. Furthermore, because it is in the nature of governments to downplay the importance of armed forces in time of peace, navies for one are usually not given prime consideration in a country's list of priorities. In the face of more pressing non-military issues, the military will need time to adjust to the changes in the new strategic scenarios which have been outlined earlier in this volume. It has been argued that while fewer obstacles exist to hinder the impetus for much more cooperation among navies in the multi-polar world, the absence of threats tends to encourage procrastination and to a point, complacency. This occurs because, in the post-Cold War era, the military does not figure very prominently in the

development agendas of most countries in the region, except where a higher level of military threat continues to flourish; for example in the Philippines and on the Korean Peninsula.

We notice that joint exercises have declined in frequency in certain countries. This has happened because civilian governments are reluctant to release funds to enable the military to carry out their cooperative programs. The need for joint exercises has not diminished, nor should the military fritter away their hard won skills for spit and polish. Armies must never cease preparing for war. In a maritime context, navies in the region seem to get more than their fair share of the budget allocation for asset building. But, the funds for exercises and training have, you will notice, declined substantially over the years. The more multi-polar world has, however, refocused the mission of navies in peacetime.

PEACETIME TASKS

There is a variety of functions which the navies of the world are playing out which in the past were considered to be subsidiary to their primary role. Meeting these challenges of low level threat for example, has become the first concern of most navies in peacetime. And, there lies the danger, because with the exception of a very few naval professionals, most naval commanders could lose sight of the actual role of navies in peacetime; training, skill enhancement in preparation for war and doing other things, such as protecting national interests.

While managing low level threats is how navies make themselves relevant to changed strategic scenarios, that role must remain peripheral to their traditional role of keeping peace and winning wars. Some of the low level threats which regional navies are managing, or engaged in now, include anti-piracy, search and rescue operations, anti-pollution measures, surveillance, environmental protection and a whole range of other measures already alluded to in the chapter written by Sam Bateman. Some of these roles are much more constabulary in nature, with a premium on the minimum use of force. These are roles which most navies in the Asia-Pacific region are not adequately trained for and are less suited to undertake: the tasks are categorised as resource protection, alongside peacekeeping. This role, as mentioned earlier, has become a major mission of most navies in peacetime and yet the training doctrine of most navies has not changed since the Second World War.

At the same time, the security or constabulary mission can hinder naval cooperation, because this is the precise area in which non-naval military agencies have traditionally been involved; such as the customs, immigration and marine departments and the coastguards. In other words, the rationale for naval

cooperation in these areas can be extremely marginal. Ultimately, it can be argued that these rules are peripheral to navies anyhow. Besides turf management problems, the scope for naval cooperation in these areas is less pressing and in certain countries, not always welcome. The result of proposing a proper *raison d'etre* is that there are clear limitations against choosing naval cooperation in the Asia-Pacific region. I think that this fact must be accepted and that we have to work within this context.

Arguably, with the introduction of 200nm exclusive economic zones, naval cooperation takes on a much more challenging task, especially in the fields of resource protection and resource management. This is the case because the oceans' resources have to be governed through a process of cooperation among various countries. And the navies have some war-winning or war-making qualities which other organisations lack, and which can be used for managing the oceans' resources.

THE PROBLEM OF GEOGRAPHY

The other problem pertaining to naval cooperation will be geography. Geography and strategic focus can be barriers to naval cooperation in different regions. The strategic problems of Northeast Asia, for example, differ considerably from those of Southeast Asia, a point which is alluded to in several other chapters of this book. Northeast Asia's primary military preoccupation, for example, still revolves around traditional military threats involving big or middle power navies. The strategic preoccupation of US, Japanese, Taiwanese, Korean and Chinese navies is well documented elsewhere. But, surprising to say, in this region, navies must remain on very high alert and cannot afford to stand down just yet: witness what happened in August 1995 when the Chinese began to fire surface to surface missiles in the Taiwan Strait. So, the perceived need to establish naval power balance in Northeast Asia is also well known, and the associated problems of naval cooperation among rival navies are also to be expected.

Even if there is a different emphasis on strategic concerns between these two different regions, for example, the prospects for naval cooperation between the navies of Northeast and Southeast Asia are not likely to materialise in a very big way, except through information sharing between some. Others will carry out courtesy calls, port calls and exchanges of high value to them. These are within the realm of trust building measures or peace-building mechanisms. But, beyond this, and apart from cooperation related to technology transfer, the scope for navy-to-navy cooperation between the two regional groups is quite remote. I do not foresee, for example, the possibility of the Taiwanese Navy exercising with

any Southeast Asian navy in the South China Sea, without alarming China. Similarly, any Japan-Southeast Asian naval cooperation involving joint exercises, for example, would alarm China. Conversely, any China-Southeast Asian naval cooperation would be construed as a move to create a *cordon sanitaire* against Japan. And any talk of containment against any power, as suggested by some authors and some well established journalists, should be dismissed very quickly, as it does not help to promote confidence in the region.

The military situation in Southeast Asia is less tense than that in Northeast Asia. Still, there are impediments to naval cooperation in the region, beyond existing bilateral arrangements. Nevertheless, the level of cooperation is quite satisfactory, at least among the ASEAN countries. Among the ASEAN six, excluding newcomer Vietnam, there has been at least a decade of cooperative activity at varying levels, but with definite limitations. So, for example, despite the high level of cooperation at the bilateral level, no multilateral exercises have taken place among the members. And part of this reluctance or resistance to the multilateral defence mentality, is the carry-over fear from the Cold War days of converting ASEAN into a military pact. The opposition to multilateral defence is difficult to understand, simply because more dividends can be reaped from such multilateral cooperation. There is a tendency in the region to confuse any enthusiasm for military pacts with the need for multilateral cooperation. The two issues are not necessarily synonymous. For example, one can have a regional military pact without multilateral cooperation, and vice versa; although such a situation would be unique.

Interesting to note is that this resistance to multilateral defence arrangements in ASEAN has become almost an inbred culture of its own. It is not likely to change in the future, although we are beginning to hear noises from certain quarters demanding greater military cooperation within ASEAN. Thus, while naval cooperation among ASEAN countries and excluding Vietnam for the time being, is likely to deepen, it would be quite difficult to widen cooperation among the member countries; and this is to note the difference between deepening cooperation and widening it. Interestingly, we could speak of using third powers, or third countries, like the US, to promote multilateral military exercises outside the purview of ASEAN. This could be a possibility in the long run. However, given the current strained relations (if they are strained) between the US and China, any Southeast Asian multilateral exercises involving the US or any other power as a core partner would not be viewed very kindly in Beijing. It might also be construed as a move to construct an anti-China coalition. And, therefore, that is not likely to take place in the very near future.

HISTORY AND ITS LEGACY

The other problems which can be considered as barriers to greater naval cooperation within the region have to do, especially within ASEAN, with lingering intra-ASEAN suspicions, which tend to work against naval cooperation in many areas. Apart from exercises, wider multi-lateral defence exchanges, intelligence sharing, surveillance and defence production are also affected by lingering suspicions which are difficult to dispel, despite much improved political cooperation within ASEAN.

Confirming this intra-ASEAN suspicion is the real fear of navies – which must be explained. As an example, in July 1995 the Royal Thai Navy opened fire and sank two Cambodian patrol craft, in Cambodian waters, off an island of the Kokong province. The Cambodian Government has, of course, reportedly protested to Thailand over the unfortunate incident. The second event occurred much more recently, on 6 November 1995. Then, a Royal Malaysian Navy patrol boat opened fire on a Thai fishing vessel illegally fishing within Malaysia's EEZ. Thailand, of course, protested for what they alleged was excessive use of force by the Royal Malaysian Navy. In this particular incident, two Thai crewmen were killed. Naturally, the Royal Malaysian Navy considered the action to be well within their rights.

But, the important issue is the impression which has been created in the minds of many from all of these incidents. It seems to suggest that the navies have been quite trigger happy. This could lead to what this writer terms 'fear of the navies' which could actually affect greater cooperation among navies. Now, what are not reported sometimes, and even if reported are purposely omitted in some media, are the events which led to these incidents. In the case of the Malaysian incident, for example, the RMN boat maintained that it used minimum force to arrest the 20 tonne fishing vessel, after a gruelling two hour chase. At one point, in an attempt to escape arrest, the fishing vessel almost rammed the patrol boat. There have been many similar occasions in the past, when patrol boats in Malaysian as well as in Indonesian and Philippine waters, have been rammed by fishing vessels.

For the Royal Malaysian Navy, which has had frequent brushes in the past with Thai boats fishing illegally in Malaysian waters, the incident of 10 April 1993 was still fresh in the mind. In that incident, three of their colleagues who boarded the Thai vessel to make an arrest were taken prisoners by the Thai fishermen. Subsequently, one RMN rating was killed and another was abducted to Thailand before being released later, following the intervention of the government. It is perhaps reminiscent of the incident in the English Channel recounted elsewhere in this book by Dr Breemer. So, operating in such a hostile environment keeps the Royal Malaysian Navy on its toes – most of the time. The region generally, of

course, is full of stories of such incidents. In February and March 1995, for instance, the Philippines Navy and the RMN, in separate incidents, arrested fishing vessels from the Republic of China (Taiwan) for illegal fishing in the South China Sea. Except in the Cambodian incident where the Royal Thai Navy went to the assistance of a Thai fisherman, the other incidents have been confined to straight forward enforcement action.

What could happen in the future, and this could affect cooperation, is that the respective regional navies could begin to take protective action and escort their own fishing vessels as they pass through the EEZs of neighbouring countries. Surely, this will be progressively conflict building and not confidence building? While this protective action is contrary to State practice, it will make enforcement action by navies in EEZs much more difficult to perform in future. And only through effective efforts to build more confidence and to prevent such enterprises, can such incidents be prevented.

CONCLUSION

Finally, the continuing naval buildup in the region and the absence of a well defined common threat also militate against further naval cooperation. While modernising the navies is an accepted rationale for the buildup, contingency building worries many. Until and unless these intra-ASEAN problems are laid to rest, there will be a limit to substantial naval cooperation, except in very peripheral areas. So, while the impetus for improved navy-to-navy relations is important for regional stability, such cooperation can take place only within an improved, stable, regional political context. Underlying everything has to be politics. And a navy is nothing but an instrument of a state ... an extension of politics by other means.

Nonetheless, these peacetime functions (resource protection, for example) are beginning to become visibly much more delicate. Since the consequences of their routine enforcement can have foreign policy implications, there is a need for navies worldwide to be adequately trained for this mission. One way of minimising the effects of misjudgment which could result in an unintended foreign relations outcome, is to develop mechanisms for stable cooperation among navies at both levels; bilateral and regional. Such mechanisms could pave the way for greater transparency in naval activities.

This book provides insight into how navies and air forces in the Asia Pacific are likely to link their strategies, operations and force structures to national interests beyond 2000. It also outlines new technological and doctrinal developments that will impact upon the development and exercise of sea power in the new century.

Due to a major expansion in maritime interests and responsibilities among Asia Pacific countries, sea power has become an increasingly important instrument of national policy. Sea power's role is bound to grow as maritime estates become more regulated and better defended by navies and air forces. Therefore, it is important to understand the nature and extent of factors affecting sea power so that the heavy and growing investment made in it can be used to best effect.

Serving naval and air force personnel, staff of government departments and agencies with stakes in regional security, as well as interested members of the community will find this book useful and informative. Representatives of forward looking industries that must be well advised on strategic and technological factors affecting maritime operations and force structures in the longer term will also find the book valuable.