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Given that the geopolitical balance of power in the Indian Ocean is in a state of flux, with new Asian powers jostling with established Grotian powers for maritime space and championing the cause of a Blue economy rather than the old 'Brown' one, and given that the challenges of human security are common across the several disparate littoral States of this maritime expanse, *Constructive Engagement* is the only viable maritime strategy that can ensure that all boats rise with the tide. For India, too, it is this very strategic concept that shapes much of New Delhi's geopolitics and the security concepts and formulations that lie within it.

Traditionally, security used to be thought of only in terms of the defence of territory within a state system whose defining characteristic was an incessant competition for military superiority with other nation-states, all lying within a classic st`ate of anarchy, devoid of superior or governing authority. Today, however, the IOR States have swung around to a far more holistic approach to maritime security and this is very aptly reflected in the theme chosen for this year's edition of the Gale Dialogue. This changed approach finds its historical moorings in the famous "*Common Security*" report that had been authored as long ago as 1980 by the "*Independent Commission on Disarmament and Security Issues*" chaired by the late Prime Minister of Sweden, Mr. Olaf Palme. This report emphatically drew attention to alternative ways of thinking about peace and security by formally acknowledging that common security requires that people live in dignity and peace, that they have enough to eat, and are able to find work and live in a world without poverty.

While *military* maritime security does, of course, continue to enjoy primacy for India, existing as it does in a world-system defined by Westphalian concepts of national sovereignty, new terms such as 'Non-Traditional Security' and 'Human Security Issues', largely drawn from the 1994 Report of the UNDP, have made their way into maritime India's contemporary security-lexicon and lodged themselves within its collective security-consciousness. Maritime Security is now firmly established within a new construct that incorporates military, political, economic societal and environmental dimensions, and recognises the many linkages between them.

Thus, threats to human-security, such as religious extremism; international terrorism; drug and arms smuggling; demographic shifts — whether caused by migration or by other factors; human trafficking; environmental degradation; energy, food and water shortages; all now figure prominently as threats that are inseparable from

military ones. These have led to the formulation of new concepts such as 'comprehensive security' and 'cooperative security.' Clearly, however, security issues within the maritime domain need to be referenced more towards common *interests* rather than *threats*. At a regional level, it is these very Human Security issues that have been mentioned above that constitute common interests. It is a common regional interest to create and consolidate a region in which the comity of nations is both intrinsic and assured.... where every nation, big or small, is treated as an equal... where multiple options of governance are recognised as being functions of the independent choice of the people of each nation-state... where the people of every state of the region can live in dignity and peace... where poverty stands banished and prosperity sits in its place.... where the state protects the individual and the individual preserves the state in a symbiotic relationship designed to establish and spread stability across the region.... where malevolent non-State entities find neither spatial nor temporal room for manoeuvre... in sum, then our common interests are the absence-of or freedom-from threats. It is, therefore, appropriate that within the maritime domain, the concept of Maritime Security is increasingly being described as a condition characterised by *"freedom from threats arising either in or from the sea."* [1] These threats could arise from natural causes or from manmade ones, or from the interplay of one with the other, as in the case of environmental degradation or global warming. Insofar as the targets of such threats (arising from a lack of maritime security) are concerned, these could be individuals themselves — or 'groupings' of individuals, such as societies and/or nation-states. When these threats address the regional fabric itself, nation-states find themselves increasingly enmeshed in a complex web of security interdependence, which tends to be regionally focused and a robust regional initiative ought to be a logical outcome of this regional focus.

Although the Indo-Pacific region has several manifestations of the regional drive towards cooperative security through Constructive Engagement, most of them lie in the Pacific. Examples include ASEAN, ASEAN+3, APEC, ARF, the 6-Party Talks, the East Asia Summit, etc. At the Navy level, the Western Pacific Naval Symposium (WPNS) is clearly an important multilateral security construct.

The Indian Ocean segment of the Asia-Pacific littoral is now beginning to catch up. However, for much of the Twentieth Century such sub-regional geopolitical constructs as did emerge within the Indian Ocean remained limited to West Asia and southern Africa (the Arab League in 1945, the SADC in 1980 and the GCC in 1981). There was nothing to be found at a pan-regional level that might knit together at least a significant proportion of the 37 littoral nation-states of the Indian Ocean and its rim. It was not until the closing years of the Twentieth Century that a Mauritian-led initiative fructified and led to the launch, in March of 1997, of the 'Indian Ocean Rim – Association for Regional Cooperation' (IOR-ARC). However, for the first decade-and-a-half of its existence, this grouping confined itself purely to economic cooperation and specifically abjured security issues. It must, of course, be admitted that in 1997, the notion of security within the collective minds of the countries of the Indian Ocean was still very strongly biased towards military security alone. 2013 was a watershed for the organisation, for in that year, the IOR-ARC was renamed 'Indian Ocean Rim Association' (IORA)[2] and identified for itself six priority areas to promote the sustained growth and balanced development of the region, of which 'maritime safety and security' is the first priority [3]. The IORA also spelt out its intent to have its own work on maritime security and safety and disaster management aligned-with and made to complement the similar initiatives taken or envisaged by the Indian Ocean Naval Symposium

1. Address by Dr Manmohan Singh, erstwhile Prime Minister of India, inaugurating the Indian Ocean Naval Symposium (IONS) Seminar at New Delhi, 14 February, 2008; available at url: http://archivepmo.nic.in/drmanmohansingh/speech-details.php?nodeid=633

2. 13th Meeting of the Council of Ministers of the Indian Ocean Rim Association — Perth Communiqué, 01 November 2013; available at url: www.iora.net/media/139388/perth_communiqu__2013.pdf

3. IORA Website; available at url: http://www.iora.net/about-us/priority-areas.aspx

(IONS). This intent now being fleshed out and early next month (in November 2017), the second Indian Ocean Rim Association (IORA) meeting of experts on maritime safety and security will be wrestling with the issue of how best to establish and sustain an institutional link with IONS .[4]

At this juncture, a few words on the development of the IONS construct for holistic regional maritime security may be in order. In February of 2008, driven by the need to address regional vulnerabilities by capitalising upon regional strengths, the Indian Navy made a stupendous effort to assemble in New Delhi the Chiefs-of-Navy of very nearly all littoral states of the Indian Ocean Region. Sitting and discussing together — for the first time ever — both in 'assembly' and in 'conclave', the chiefs launched the 21st Century's first significant international maritime-security initiative — namely, the **Indian Ocean Naval Symposium**, or 'IONS.' That the launch of so important a regional initiative was able to meet with such wide acceptance across the length and breadth of the Indian Ocean was in itself a unique phenomenon — but one representative of a region that is beginning to come into its own and seems ready to evolve a broad consensus in facing the myriad security challenges within the maritime domain.

The acronym 'IONS' is an appropriate one, since the etymology of the English word ions is drawn from the Greek word *ienai* meaning go, and implying movement. The fundamental concept of IONS, too, remains one of 'moving' together — as a region. Under the IONS construct, the 37 littoral states of the Indian Ocean Region were geographically grouped into four sub-regions, as depicted:-

West Asian Littoral		East African Littoral		South Asian Littoral		South-East Asian & Australian Littoral	
1	Bahrain	1	Comoros	1	Bangladesh	1	Australia
2	Iran	2	Djibouti	2	India	2	Indonesia
3	Iraq	3	Egypt	3	Maldives	3	Malaysia
4	Israel	4	Eritrea	4	Pakistan	4	Myanmar
5	Jordan	5	France	5	Seychelles	5	Singapore
6	Kuwait	6	Kenya	6	Sri Lanka	6	Thailand
7	Oman	7	Madagascar	7	UK	7	Timor Leste
8	Qatar	8	Mauritius				
9	Saudi Arabia	9	Mozambique				
10	UAE	10	Somalia				
11	Yemen	11	South Africa				
		12	Sudan				
		13	Tanzania				

The formal launch of the initiative was effected through the inaugural 'Conclave-of-Chiefs.' This conclave is held once every two years, with a new chairperson at the helm. As had been the intention from the start, it is at this 'Conclave-of-Chiefs,' removed from the glare of the media, that the most meaningful progress occurs in accordance with a formalised 'Charter of Business.' It is a matter of very great satisfaction that the Charter-of-Business has already been adopted, especially if it is recalled that the WPNS Charter took 12 years (from 1988 to 2000) to receive formal approval from all its constituent members. This consensual adoption (in 2014) of the charter notwithstanding, there are some navies who have yet to formally sign the charter, as may be seen from the shaded cells of the following tabulation:

West Asian Littoral		East African Littoral		South Asian Littoral		South-East Asian & Australian Littoral	
1	Bahrain	1	Comoros	1	Bangladesh	1	Australia
2	Iran	2	Djibouti	2	India	2	Indonesia
3	Iraq	3	Egypt	3	Maldives	3	Malaysia
4	Israel	4	Eritrea	4	Pakistan	4	Myanmar
5	Jordan	5	France	5	Seychelles	5	Singapore
6	Kuwait	6	Kenya	6	Sri Lanka	6	Thailand
7	Oman	7	Madagascar	7	UK	7	Timor Leste
8	Qatar	8	Mauritius				
9	Saudi Arabia	9	Mozambique	**OBSERVERS**			
10	UAE	10	Somalia		Malaysia		Russia
11	Yemen	11	South Africa		Madagascar		Spain
		12	Sudan		China		Germany
		13	Tanzania		Japan		

Eight Conclave-of-Chiefs have been held thus far. Each conclave is supplemented by an IONS Seminar, which the Chiefs also attend, along with a galaxy of luminaries in various disciplines relevant to security within the maritime domain. As such, IONS is a unique regional forum through which the Chiefs-of-Navy of all the littoral states of the IOR periodically meet to constructively engage one another through the creation and promotion of regionally relevant mechanisms, events, and activities related to maritime security. Yet, given the diversity of the region as a whole, the need to *make haste slowly* in the initial years was recognised to be important. Successive Conclaves-of-Chiefs have, therefore, very deliberately spent time and great effort in building the foundation of the construct through an incremental series of small but crucial confidence-building steps.

In accordance with its original design, the chairmanship of IONS rotates sequentially through each of the four sub-regions. This

4. Commodore Gopal Suri; "Case for a Regional Maritime Construct in the Indo-Pacific", Vivekananda International Foundation Occasional paper – January 2016; available at url: http://www.vifindia.org/sites/default/files/case-for-a-regional-maritime-security-construct-for-the-indo-pacific.pdf

ensures that the somewhat different priorities given even to common challenges, and, of course, such maritime-security challenges as are unique to a given sub-region, are all given the emphasis and attention that they deserve. The first rotation through all sub-regions has already been completed with the Chiefs of Navy of India (2008-2010), the UAE (2010-2012), South Africa (2012-2014), Australia (2014-2016) all having sequentially chaired the IONS. The chairmanship is currently held by the Chief of the Navy of Bangladesh (2016-2018). With nine years having passed and one full rotation having been completed, there is a feeling that the era for making haste slowly is now over and it is time to address holistic security in a more granular fashion.

Accurate knowledge of maritime activities is vital for maritime security and the development of the blue economy. Consequently, the need to have and to share the best possible situational awareness of matters maritime certainly ranks amongst the most pressing of contemporary issues. The question is how best to obtain a higher degree of visibility in the regional maritime space of the IOR. Within the IOR, 'Maritime Domain Awareness' (MDA), is the effective understanding of anything associated with the global maritime domain that could impact the security, safety, economy, or environment of the sovereign nations that constitute the IOR. This overarching objective forms a superset within which lie a number of very important subsets. These include the need to increase transparency, information-sharing (not just between governments but also between industry and government), the adoption of international norms and standards, and the enhancement of response mechanisms. 'Response' is always a follow-though of 'awareness'. As such, the IONS construct is ideally suited to facilitate this common objective of sharing unclassified information relevant to the maritime environment between sovereign nations so as to enable its constituents to predict, detect and defeat illegal activities that threaten the safety and wellbeing of the regional maritime common. This is especially important for littoral states located in the western segment of the Indian Ocean, because of the lack

of reliable MDA organisational and functional structures at the regional level. Therefore, IONS must urgently endeavour to establish structures, procedures and processes that will meaningfully supplement ongoing capacity-building and capability-enhancement efforts. Prominent amongst these is the Djibouti Code of Conduct (DCoC) process. The DCoC is a regional agreement for training and information-sharing that has been initiated and is supported by the International Maritime Organisation [IMO]) along with the EU's project on 'Critical Maritime Routes in the Indian Ocean' (CRIMARIO), which commenced in 2009 and has led to the establishment of three Information-Sharing Centres (ISCs) — in Sana'a (Yemen), Mombasa (Kenya) and Dar es Salaam (Tanzania), with Sana'a being the overarching regional centre. Another structure that IONS could interface with, to mutual benefit, is the EU's 'Programme to Promote Regional Maritime Security' [MaSe], established in 2013, which is expected to shortly launch two additional centres for information-sharing (in Madagascar) and operational coordination (in Seychelles) under the leadership of the 'Indian Ocean Commission'. [5]

In the maritime context, the sharing of unclassified information with regard to merchant vessels is often known as sharing 'White Shipping' data and this is a well-established first-step to the enhancement of collective visibility. There are several bilateral agreements between nation-states for the sharing of White Shipping data. India, for example, has already signed such agreements with the USA, the UK, Australia, France, Spain, Singapore, Myanmar, Israel, and Vietnam; and is looking to extend this activity to many more countries and multinational groupings as well. Although quasi-formal arrangements for the sharing of such data also exists between India and IONS members such as Maldives, Mauritius, Seychelles and Sri Lanka, it is timely and appropriate for similar technical agreements to be formally signed between the constituent navies of IONS. As things presently stand, at the multilateral level, the EU's Maritime Security Centre: Horn of Africa (MSCHoA) is the backbone of the MDA system in the sub-region of north-east Africa.

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5. Christian Bueger. IISS Policy Brief: Effective Maritime Domain Awareness in the western Indian Ocean. https://issafrica.s3.amazonaws.com/site/uploads/policy-brief104.pdf

Although piracy off Somalia does still occur, it is no longer quite as alarming an issue as it was around 2008-2009. Consequently, IONS has a great opportunity to support and supplement the transition from MDA-sharing structures created by extra-regional powers such as the EU. The Djibouti Code of Conduct has already been mentioned and is probably a good point at which to focus the immediate endeavours of IONS.

Due to the heterogeneous mix of platforms and sensor technologies in use today, 'data-fusion' is a major requirement of MDA. Data obtained from different sources may, for example, show the same vessel as two or more vessels that are slightly separated in space. The reverse, too, can occur. This is due to the inherent errors in bearings, ranges and reference geoids that are simultaneously in use by different contributors of the data. There is a clear need for powerful sensor data fusion architectures — and this has nothing whatsoever to do with nationally-sensitive information regarding military entities. Safety and security are constant concerns of maritime navigation, especially when considering the continuous growth of maritime traffic and the persistent decrease in the number of persons deployed aboard modern merchant ships. For instance, preventing ship accidents by monitoring vessel activity represents substantial savings in financial cost for shipping companies (e.g., oil spill clean-up) and averts irrevocable damages to maritime ecosystems (e.g., the closure of fisheries). One of the main sources of White Shipping data is the Automatic Information System (AIS). However, it is far from adequate as a means of comprehensive MDA. AIS messages are vulnerable to manipulation and, due to the unsecured channel of transmission, are subject to hacking. AIS data can — and often does — contain deliberate falsifications and spoofing, such as identity fraud, obscured destinations, and GPS manipulations. It is believed that some 5% of AIS static data transmissions have errors of one or another kind. Quite often, fishing vessels deliberately avoid transmitting their information, either because they are involved in illicit activities such as illegal fishing, or simply in order to keep their fishing areas secret from competitors. Quite

apart from the formidable challenges posed by the sheer volume, velocity and variety of information on White Shipping that is being shared (or is sought to be shared), it is essential to establish the veracity of all this maritime data. Thus, to overcome the problem of incompleteness of data, the correlated exploitation of additional and heterogeneous sources is unavoidable.

Obviously, enhanced visibility in the form of Maritime Domain Awareness is not achieved simply by the sharing of electronic or digital data. It also requires the process of trying to understand events — something that Americans call 'sense-making' (also often written as 'SenseMaking'), which is an active process where the human entity within an MDA chain builds and refines questions and recovers situational awareness. While hardware and software for MDA are subjects of much informed debate, inadequate concentration has been laid upon the 'skinware', i.e., the human being. Many human-interaction facets, ranging from cultural differences to language barriers, can affect the maximising of MDA. For instance, human social networking that enhances cooperation and mutual trust is a crucial element in any meaningful collaborative mechanism across national boundaries. In this regard, the numerous Multi-National Experiments (MNE) of Maritime Situational Awareness (MSA [=MDA]) conducted between participating teams from Sweden, Finland, Singapore and NATO in the first decade of the present century[7] offer an excellent model for IONS to adapt and adopt.

Indeed, given the heterogeneous nature of the region (a recognition that has shaped the internal structure of the IONS construct), solutions that rely solely upon high-tech approaches are unlikely to succeed in the IOR. There is a clear need to identify opportunities not only through high-tech means and processes, but equally, through low-tech solutions, human resources and regional collaboration for the improvement of maritime domain awareness. While a basic understanding of MDA technology is important, and while training towards this end is certainly required, 'IONS' clearly needs to lay

6. Anne Koskinen, Challenges for Cooperation in Achieving Maritime Situational Awareness (MSA) from the Operator's Perspective: Lessons learned from MNE5 MSA Experimentations. https://journal.fi/ta/article/view/3687/3472

a far greater emphasis on collating public sources and working with coastal populations so that national and regional capacities are developed simultaneously. For example, the promotion of MDA should be intrinsic to coastal and port-led development ventures (such as India's ambitious SAGARMALA project). If coastal communities and environmental agencies are sensitised to the benefits of collaborating with MDA centres, MDA would become that much more people-centric rather than remaining only technology-centric. Fisheries offers a useful illustration of this concept. If MDA can be seen to benefit fishing communities by informing them of the presence of desired schools of fish, and simultaneously warning off poachers from the community's fishing grounds, the fishing community will become a valuable source of MDA, transforming itself into the eyes and ears of the awareness-project and supplementing the technical measures in place.

IONS would also do well to avoid an undue obsession with providing a real-time picture of the regional maritime domain. In this regard, it would be extremely useful for IONS to draw both, inspiration and lessons, from the excellent work done by ReCAAP (Regional Cooperation Agreement on Combating Piracy and Armed Robbery against ships in Asia) and the IFC (Information Fusion Centre). ReCAAP, for example, has gained high visibility and credibility more through its analytical reports and guidelines, rather than by providing a real-time picture of the maritime domain. Likewise, although the IFC capitalises upon Singapore's high technological-base and its generous resources, it's most substantial contribution to

regional MDA are its weekly summary of events and incidents, which rely entirely on open sources. IONS should adopt this model for increased visibility and should accordingly create a structure that would provide reliable weekly reports on activities in regional waters, using the already-available network of national focal points to verify and disseminate media reports, thereby becoming reliable sources of information and knowledge providers. Yet another structure with which IONS should urgently develop strong institutional linkages is the 'Indian Ocean Forum on Maritime Crime' (IOFMC). This is an informal technical collaboration mechanism organised and implemented by the 'Global Maritime Crime Programme' of the UN Office on Drugs and Crime (UNODC). Its objective is to enhance the collaboration between law enforcement officials in the region and to 'promote a shared understanding of the maritime crimes' in the region.

Perhaps most important of need of all is to quickly establish robust and proactive linkages between the principal regional-political structure of the Indian Ocean — namely, IORA — and its functional instrument, IONS, and then to extend these structural and functional linkages to ASEAN — and its corresponding functional instrument — namely, the Western Pacific Naval Symposium (WPNS). Such a progression would consolidate the Indo-Pacific into a 'Maritime Regional Security Complex', which the eminent strategic analyst and prolific writer of the 1980s, Barry Buzan, had described as "...*a group of states whose primary security concerns link together sufficiently closely that their national securities cannot realistically be considered apart from one another.*" [7]

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7 Barry Buzan; "People, States & Fear: An Agenda for International Security Studies in the Post-Cold War Era"; ECPR Press, 2nd edition, University of Essex, Colchester, UK; Reprint: 2009, p. 160