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In 1984, he was appointed as Head of the Nuclear Technology Programme, Nuclear Energy Unit. Amongst his main responsibilities then were to plan, execute and co-ordinate research work in building up national capabilities in nuclear technology for power generation. Years later, after a national policy did not consider the adoption of nuclear power for electricity generation, he diverted efforts and resources to addressing advanced materials. Subsequently, he lead the Materials Science and Technology Programme.

In 1993, he was appointed as Director of Research, a position responsible for the co-ordination of all scientific research and development activities at the Malaysia Institute for Nuclear Technology Research (MINT – a reorganisation of Nuclear Energy Unit). In 1995 he was seconded to the Ministry of Defence holding the post of Director, Defence Science and Technology Centre. In 2002 his service was transferred to the Ministry of Defence with the post of Director-General, Science and Technology Research Institute for Defence (STRIDE).

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Apart from his official duties, he is active in contributing to the academic community and societies. He has written several papers, delivered lectures and written a university-level book on radioactivity, which won the 1993 Malaysian Linguistic Society award against 99 other candidates. He frequently held posts in academic societies and has high hopes for the proper adoption of scientific values in national development.

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NON-TRADITIONAL THREATS AND SECURITY POLICY RESPONSE

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ABSTRACT

National security is no longer focused solely on protection of the sovereign state from attacks by other states. An increasing number of non-traditional issues have been securitized and included on the security agenda of nation states since the end of the Cold War. These non-traditional security threats are perpetrated by non-state actors and casually arise from non-human sources which challenge security policy. As a result, security policy has changed and new thinking and approaches have been required to address these threats because traditional response measures are not the most effective. The concept of resilience has gained increased recognition as a means to deal with these threats as part of a policy architecture adopted by a number of nation-states.

Keywords: Non-traditional security, non state actors, public policy, nation state, national resilience.

INTRODUCTION

The decades since the end of the Cold War have been marked by a number of issues which were previously not considered part of the security agenda and today we face a new class of threat. Traditional responses by nation-states are often ineffective against such security threats by non-state actors and arising from non-human sources. Non-traditional security threats cannot be looked at in isolation but need to be considered within the broader political, social and environmental context. Such issues have led nation-states to consider different ways to deal with and address these issues. This paper considers some of the non-traditional threats facing nation-states and decision-makers arising from non-state actors and non-human sources. The paper is divided into three components within a contextual theoretical framework of complex systems whereby each component is self contained and is related to the others in a holistic, systemic way. The three sections of the paper relate to public policy; non-traditional security issues; and national resilience.

PUBLIC POLICY

Public policy is a complex issue and the policy process has been described as a cycle that is deliberative, staged, recursive, and administrative [1]. It is also the political system's response of a nation-state to demands arising from its setting, whether that is social, economic or environmental. In this context, the political system is a mechanism by which popular demands and popular support for the state are combined to produce those policy outputs that best ensure the long term stability of the political system. Political systems can be seen as analogous to complex systems with feedback loops and clear goals, with policy making as a dynamic ongoing process.

For the purposes of this paper, public policy will be ascribed three components: problems, participants, and the way forward. The *problem* is the issue that needs to be addressed. In this paper it can be described as those situations or factors which are not traditionally identified as being a security issue but which could have security implications. It is also important to consider the way in which the *problem* is framed in the policy debate, that is, how non-traditional issues are framed. The *participants* are the individual or group that is influential in forming a plan to address the problem; in this context participants refer to organisations and communities and the implicit and explicit links between them, as well as how they contribute to the development of national resilience. The third element of the trilogy of components of public policy is, *the way forward* which is the finalised course of action decided upon by government. It relates to the broader public policy context in which security has evolved and changed and of which non traditional security issues are now part of the security agenda. It also relates to the subsequent development of strategies and responses associated with national resilience.

Before addressing this topic further a brief review of the broader security policy context is necessary to set the *problem* of non-traditional security issues in perspective. Security policy is influenced by internal domestic and well as by external factors, and the degree of influence depends on the issue. National security policy development has changed around the globe. It was previously dominated by realist thinking and was primarily the domain of the military focused on traditional defence of territorial integrity. But national security policy has altered, partly because the nature of conflict has changed and because a number of issues have been securitized and gradually included on the security agenda.

In the eighteenth and nineteenth centuries, wars were generally short, lasting only about two years between the declaration of war and the signing of the peace treaty [2]. There were further changes in the nature of conflict following the experience of the two World Wars. Cross border war became primarily a '*small- or medium-power activity*', which meant the attention of great powers was focused on other types of conflicts [3]. In the period from 1946 to 1991 there were political conflict, economic competition, military tension and proxy wars where third parties substitutes for opposing powers fighting each other directly. This period, known as the Cold War, involved several conflicts, the most

notable of which were the Berlin Blockade in the late 1940s from 1948 to 1949, and the Korean War in the 1950s from 1950 to 1953. These conflicts were followed in the 1960s with the Berlin Crisis in 1961, and the Cuban Missile Crisis in 1962. Then there was the Vietnam or American War, as it is known in Vietnam, which lasted sixteen years to 1975 and it was followed in 1979 by the Soviet War in Afghanistan which lasted a decade.

During this period of the Cold War, hostile states were often treated as rational actors who could, sometimes, be dissuaded from hostile intent through explicit deterrence measures. As demonstrated by the conflicts noted above, policy arguments were narrowly focused on a known or identifiable foe and response efforts were targeted, involving political and diplomatic endeavours, and ultimately military deployment. This narrow approach also influenced how resources were used and deployed and meant other potential threats were often diminished in importance. For example, during the Cold War, the Federal Emergency Management Agency (FEMA) in the United States of America spent seventy-five percent of its financial and human resources on preparing for nuclear war to the detriment of state and local capacity to respond to natural disasters [4].

Wars were often conducted '*unofficially*', that is without formal declarations of their beginning or end, such as the Greek civil war in the late 1940s. Other conflicts, such as in Northern Ireland lasted for decades and which could be described as a war in all but name. As shown by history, the nature of conflict has changed and in turn this has influenced evolving theoretical approaches and understanding of security, as well as practical responses [5]. Over time, there has been a shift from the realist perspective where sovereign states are the principal actors in international relations to the current environment where a number of issues have been securitized and gradually included on the security agenda. The 1994 United Nations Human Development Report [6] stated that the concept of security had, '*for too long been interpreted narrowly: as security of territory from external aggression, or as protection of national interests in foreign policy*'.

Ten years later in 2004 the report by the UN Secretary-General's High-level Panel on Threats, Challenges and Change [7] argued than no country can afford to deal with today's threats alone and no threats can be dealt effectively unless other threats are addressed simultaneously. That Report remains as valid today as it did at the start of the millennium.

National security was previously almost the exclusive domain of the military focused on traditional defence of territorial integrity and the nation state, but security issues are no longer limited by territoriality and political boundaries. Today we are presented with an expanded view of national security. It can now be defined as freedom from the threats that put in danger the survival and the development of the society organised in a form of state [8]. Increasingly, states are required to adopt a broader stance to protect their economic independence and societal well being from a different range of perceived threats. The range of those potential threats has changed over time. They have a much broader focus and include non-traditional security threats arising from actions by non-state actors, failed or failing states, and extremist ideologies. Such threats also include

those generated from non-human sources such as infectious diseases and pandemics. This change holds challenges for public policy development and it has implications for how nation-states balance the requirements of the realist view of security focusing as it does on sovereignty and territoriality, with the requirement of meeting and dealing with non-traditional security challenges.

NON- TRADITIONAL SECURITY ISSUES

Non traditional security issues constitute the *problem* within the context of this paper. The working definition of non-traditional threats adopted by the Consortium of Non-Traditional Security Studies in Asia located in Singapore is:

Non traditional security threats are defined as challenges to the survival and well being of peoples and states that arise primarily from non-military sources, such as climate change, cross-border environmental degradation and resource depletion, infectious diseases, natural disasters, irregular migration, food shortages and transnational crimes such as people smuggling and drug trafficking.

As noted by the Centre, these dangers are transnational in scope, defy unilateral remedies and require comprehensive, that is, political, economic and social responses, as well as the humanitarian use of military intervention.

There is growing recognition within the public policy arena across the globe that new security challenges are proving to be more severe and more likely to inflict harm to a greater number of people than conventional threats of interstate wars and conflicts [9]. In the past, the United Kingdom like many other countries was of the view that the nation-state was the traditional focus of foreign, defence and security policies, and national security was understood as dealing with the protection of the state and its vital interests from attacks by other states. Over recent decades, however, the United Kingdom view of national security has broadened to include, '*threats to individual citizens and to our way of life, as well as to the integrity and interests of the state*' [10]. In its report on national security and resilience in 2009, the British House of Commons Defence Committee noted that the definition of national security and resilience now, encompasses, '*a wide range of threats, from traditional state-on-state aggression through terrorist groups to civil emergencies such as flooding or pandemics*'. The report went on to note that, '*It also encompasses a spectrum of capabilities and responses—not merely preventing or dealing with attacks or natural disasters ('security'), but also ensuring that vital services are maintained and life can continue as close to normal as possible ('resilience')*' [11].

This broader awareness and changing view has also been reflected in the United States in a number of policy documents and statements. As noted in 2009 by former US Director of National Intelligence, Admiral Dennis Blair:

'*Climate change, energy, global health and environmental security are often*

intertwined, and while not traditionally viewed as 'threats' to US national security, they will affect Americans in major ways ...such a complex and unprecedented syndrome of problems could cause outright state failure, or weaken pivotal states counted on to act as anchors of regional stability'[12].

As demonstrated by the above, disruptions which were not previously viewed as threats are now seen in a different light and incorporated into the security agenda of nation-states and included as part of their policy responses.

An example of such a disruption is the volcano in the south of Iceland, previously dormant for almost two hundred years, on 14 April 2010 it started erupting clouds of black ash. For five days the Eyjafjallajökull volcano was the world's biggest media story and it became a disruptive event of unprecedented magnitude and complexity. In Europe, about twenty countries closed their airspace as the ash cloud spread and this natural disruption held security implications for many nations. The exceptional mass of people concentrated at airports and other transportation hubs caused new and unforeseen security problems. Ash was so dense over some European countries that even helicopters could not fly through it and jet-fighters were unable to take to the skies. It was reported that several NATO F-16 aircraft sustained engine damage from the ash which left Europe militarily indefensible. As noted by NATO officials at the time, there existed, *'No available systems for airborne detection of volcanic ash and aircraft weather radar cannot detect volcanic ash because the particle size is too small'* [13].

There were unexpected economic as well as social and security implications and consequences of the Eyjafjallajökull volcanic disruption for several countries which went well beyond the obvious disruption for millions of passengers stranded around the globe. For example, in Asia, the volcanic eruption affected manufacturers and producers; and the worst affected companies included cell phone and semiconductor makers. Japanese carmaker Nissan suspended production at two plants, for lack of parts imported from Ireland; and in South Korea, one trade association put the cost of lost exports at more than $100 million [14]. In another example, flower growers in Kenya could not deliver their produce which was normally destined for Europe because of disrupted transportation. As a result, producers were left with their regular export of 500 tonnes of flowers per day and 5,000 workers were laid off, tonnes of flowers and vegetables were dumped in Kenya as the ash cloud engulfed Europe and air traffic was at a standstill. Such disruptions highlight not only the force of nature as a potential non traditional security threat, but also the intersection of social, economic and political systems which are, in turn, inter-linked to national and global security in a systemic way.

Increased awareness of non-traditional security issues presents new challenges for governments as they seek to provide the necessary leadership and to develop appropriate security architecture and associated policies. These challenges include identifying which traditional and non-traditional issues can, and should, be considered true security concerns to be included in such a policy framework. They also have implications for the way in which security professionals and analysts, as well as the military, deal with and

adapt strategies and doctrine for non-traditional security threats.

RESILIENCE

By necessity, the security policy response by nation-states has been broadened to deal with non-traditional security threats many of which are transnational in nature. The concept of resilience has been adopted and implemented as a strategy by a number of nation-states to counter such threats. However, like charisma, resilience is generally considered an elusive yet admirable quality; hard to define, but easy to recognise, and potentially very powerful. Personal resilience has been romanticised through headlines, eulogies, speeches and songs. Researchers and theorists have studied the concept and application of resilience in a number of disciplines with strong roots in ecology, engineering [15] and psychology. The concept, theory and applications of resilience are well grounded in these and other disciplines. The adaptive characteristic of resilience in the behavioural sciences is described as a '*dynamic process indicating the adaptive functioning of individuals at risk*' [16], whereas in the material sciences it is described as the ability of a material to return to its original state after it has been altered [17].

The nature and meaning of resilience has been debated over many years with each subject area offering its own variation and context-specific working definition. More recently, the concept of resilience has been adopted within other areas including disaster management, public policy and organisational management. As an applied concept, resilience offers an over-arching framework linking principles, policy, practices and structures to build capacity and readiness to deal with non-traditional security threats [18]. It also helps to facilitate a better understanding of the changing operational environment as well as of a nation-state's own capabilities, vulnerabilities and the relationship between risks. As such it can have a direct impact on the security and well-being of the people of a nation-state.

The term resilience is often used in a manner synonymous with the idea of '*bouncing back*'. This implies a capability to return to a previous state but it does not capture the reality of the disaster experience or its full implications [19]. The term '*bounce back*' also raises the question of, *bounce back to what*? Even if people wanted to return to a previous state, changes to the physical, social and psychological reality of societal life after a disaster can make this impossible. The term, '*bouncing back*', suggests returning to a point of vulnerability with no sense of improvement which is contrary to the inherent learning and transformational characteristics of resilience. It also fails to recognise new possibilities and potential opportunities in the face of adversity.

NATIONAL RESILIENCE

Extending the concept to apply to a nation-state requires questioning what is meant by the term national resilience and, although it is the least researched aspect of the whole area of resilience, it is a state to which a number of countries aspire and are keen to achieve. Since the 2001 terrorist attacks, known as 9/11, the concept of resilience has received renewed attention as a means of nation building in a number of countries and, at the time, found currency in speeches by former world leaders such as British Prime Minister Tony Blair, US President George Bush and Singapore Prime Minister Goh [20]. This changing application of resilience in widely divergent areas has extended different perspectives on, and interpretations of, the concept of resilience and approaches to its implementation. Resilience has been embraced by governments, communities and organisations and it is now found in public policy statements about national or homeland security and critical infrastructure; in disaster management manuals and in organisational management.

An unresolved ambiguity within the literature and in policy documents is that the term national resilience is often interchangeable with societal resilience. It is not always clear whether national resilience refers to broader structural elements such as governmental policy. Nor it is clear whether societal resilience refers to different communities within a nation's society or to their attributes. Since the terrorist attacks in 2001, the term resilience has been linked to the concept of homeland security most notably in the United States where this is reflected in a range of US policy documents, such as the 2010 National Security Strategy [21] and in the 2010 Quadrennial Homeland Security Review (QHSR) Report as one of three foundational elements essential to a comprehensive approach to homeland security [22]. The subsequent 2011 Presidential Policy Directive on National Preparedness states that it is,

> *'aimed at strengthening the security and resilience of the United States through systemic preparation for the threats that pose the greatest risk to the security of the nation* [23].

The ambiguity noted above means that national, or societal, resilience could imply a willingness to prefer the national interest over interests of an individual or group, that is, collectivism over individualism. As such it could suggest it is a component of national strength related to consciousness and behaviour, with the assumption that national resilience should also be expressed in a willingness to prefer the national interest over interests of an individual or group [24]. Another interpretation could be that it is an aggregation of the resilience of individuals and communities together with that of business and the economy. In turn, this could imply that individual resilience is derived from national resilience. This issue requires further research and development to ensure policy decisions and guidance are not misleading.

In the context of nation-states as complex systems, the concept of resilience can

be seen as part of a continuum along which nation-states travel towards continuous improvement, and as such, national resilience is implicitly linked to a society's core values associated with the rule of law, human rights, accountable government and sovereign security. National resilience implies connectivity of the various components with each other because they are, in effect, part of a dynamic complex system. As an applied concept, resilience offers an over-arching framework linking principles, policy, practices and structures to build capacity and readiness to deal with non-traditional security threats [25]. This conceptual approach has some appeal for Asia-Pacific nation-states where there is a strong cultural focus on shared humanity among families, communities and groups. However in the context of the Asia Pacific region, Weber [26], describes the fundamental principle of 'non interference', which is upheld by most nation states in the region and entrenched by member-states of ASEAN as, '*a barrier to multilateral, multi level, multi-faceted efforts to improve human security in the Asia-Pacific region*' [26]. Notwithstanding this potential barrier, resilience can help to facilitate a better understanding of the changing operational environment as well as of a nation-state's own capabilities, vulnerabilities and the relationship between risks.

Specific and General Resilience

In the context of non-traditional security issues and national resilience, the concept of resilience can be both specific, that is, resilient to a particular type of perturbation; or it can in general, meaning of resilient to a range of perturbations. Concentrating exclusively on a specific resilience carries the risk of becoming no resilient in other ways. An example of this could be by not recognising subtle changes in operational circumstances or assessing facts; or it could be through the over reliance on plans. Generally, planners plan in stable and predictable circumstances about known events and likely threats. This style of planning runs the risk of normalising the abnormal, and of not anticipating or being alert to unforeseen threats and disruptions which are not always known for their predictability.

The bombing of the Glasgow airport in 2007 is an example of a highly adaptive organisation and effective resilience when it achieved operational effectiveness within twenty-four hours after the bombing. The incident also demonstrated that having a plan is not the sole key to surviving an attack by non-state actors. Such an event highlighted the risk to the national security of the United Kingdom through disabling one of its major airports, however, the organisational resilience of that critical infrastructural element minimised that risk. Glasgow airport showed the importance of immediate and effective leadership, devolved decision-making, information sharing between public and private agencies, supportive external agencies and a highly motivated workforce. That combination resulted in a strong recovery with an attendant increase in reputation and staff morale in the face of a significant and very public disruption. The concept of resilience is being implemented to address uncertainty within nation-states, that is, the inability to know what combinations of conditions will occur in the future. If the future were predictable, resilience would lose its importance, everyone would simply plan for

a known set of conditions. But because the future is unpredictable, it is necessary to plan for a wide range of possible conditions, including some of which may be unlikely but which could result in significant harm if they are not anticipated [27]. Scenario-based plans are useful and have a role but, over-reliance on them is a potential vulnerability. Plans are effective and reliable if they are proven through their implementation; the second alternative is to test the plan. Any lessons arising from that testing process are only learned if they are implemented, otherwise they remain lessons observed. This is particularly important in the context of non-traditional security issues because not every disruption can be planned for or foreseen. As noted by the American philosophical mathematician Cassius J Keyser in the early 1900s, '*absolute certainty is a privilege of uneducated minds and fanatics*'.

CONCLUSION

The transition of the global security environment since the end of the Cold War has been shaped by the inclusion of non-traditional security issues which have presented new threats and challenges to national security policy. Such threats also impact the social, economic and political aspects of a community and a nation-state. Consequently, the concept of security has forever been changed and now includes a range of threats generated by non state actors as well as from non-human sources. As a result, realist thinking has limited application and traditional responses are not necessarily the most effective. This paper used the three components of public policy to explore non-traditional security threats the role of nation-states and the resultant policy response in the form of operationalised resilience.

The way in which nation-states address this new class of threat is ongoing through different public policies found in homeland security, crisis and emergency management and critical infrastructure strategies. Underpinning these strategies is the concept of resilience. This holistic and systemic approach can contribute towards building national resilience in the face of both traditional and non-traditional security threats. The concept and implementation of resilience also offers nation-states a way to facilitate the stability and security of their people, their economies and their well-being. Resilience can be a counter to the insecurity of non-traditional security threats and can form an effective attribute of today's security architecture.

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CONSIDERATION OF THE MARITIME BOUNDARIES IN THE EASTERN END OF MALACCA STRAIT

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ABSTRACT

One of the golden rules in international politics is that disputes, concerning land and maritime boundaries, between adjoining and opposite states, should never be referred to international courts. When Singapore and Malaysia referred the issues of Pedra Branca and associated rocks and reefs to the International Court of Justice, Malaysia was facing a risk. The risk was that that the Court would not only confirm Singapore's sovereignty over Pedra Branca, but then allocate large areas of seas and seabed to Singapore. Happily for Malaysia the Court contented itself by confirming Singapore's sovereignty over Pedra Branca and some adjoining rocks and Malaysia's ownership of Middle Rocks. This means that Malaysia can now insist on negotiating a line that will not have any serious effect on Malaysia's claim. It would not be unreasonable for Malaysia to restrict any claim by Singapore to a half-circle with a radius of 30 nm.

Keywords: International court of justice, maritime boundaries, continental shelves, international boundaries, maritime claim.

INTRODUCTION

Beckman and Schofield [1] have provided an excellent analysis of the decision by the International Court of Justice in respect of competing claims by Malaysia and Singapore. The Award delivered on 23 May 2008 awarded Pedra Branca to Singapore and Middle Rocks to Malaysia. South Ledge was not awarded to any State. In my opinion, and certainly in this case, Malaysia and Singapore should have negotiated the matter without any reference to the International Court.

As a result of the Court's decision, Singapore receives Pedra Branca and Malaysia secures Middle Rocks. The International Court declined to make any recommendation about the future of South Ledge. In making the awards the International Court gives no advice or guidance about the suitable development of international boundaries related to Singapore and Malaysia.

South Ledge (Kerang Selatin) is a low-tide elevation apparently not claimed by Indonesia or Malaysia. The low-tide elevation consists of three parallel ridges extending east-west. In 1971 the Hydrographer of the Navy published the fifth Edition of '*Malacca*

Strait and West Coast of Sumatra Pilot'. It dealt with Malacca Strait and its northern approaches, Singapore Strait, and the west coast of Sumatra'. South Ledge, called Kerang Selatin, consists of three parallel short ridges aligned east-west. Only the northernmost ridge dries. In 1971 the northern ridge dried 2.4 metres. It is reasonable to assume, 40 years later, that the tidal range of the northern ridge is significantly lower than 2.4 metres. It appears that neither Indonesia nor Malaysia claim sovereignty over South Ledge.

On the basis of proximity most authorities would attach South Ledge to Middle Rocks. However, wise heads in Malaysia have decided not to claim this feature and certainly Indonesian authorities express no interest. Slowly and surely, in the years ahead, South Ledge will be permanently submerged.

MARITIME BOUNDARIES IN THE EASTERN END OF MALACCA STRAIT

Beckman and Schofield [1] suggest that the configuration of islands and mainlands, in the vicinity of Pedra Branca, will restrict Singapore's maritime claims to a zone northeast of the island. They have provided a map, although there is no scale as shown in Figure 1. Singapore's potential claim is shown in the form of a lozenge with six sides.

Figure 1: General maritime claim areas of South China Sea

The long axis of the zone extends for about 16 nm. The width of the short axis extends for 6 nm. The territorial sea measured from the most westerly point extends to the northeast for 9 nm. The potential exclusive economic zone extends beyond the territorial sea for 7 nm.

Perhaps the most remarkable claim that Singapore might try to make is to the extended seas that surround Point 11, which is the westernmost terminus of the Indonesia-Malaysian continental shelves as shown at Figure 2. The coordinates of Point 11 are 104 degrees, 29 minutes and 00.5 seconds. That seabed boundary passes through nine base points, terminating at 105 degrees 49.2 seconds East and 6 degrees 5 minutes and 8 seconds. Plainly Singapore cannot claim any waters already divided north and east of Point 11.
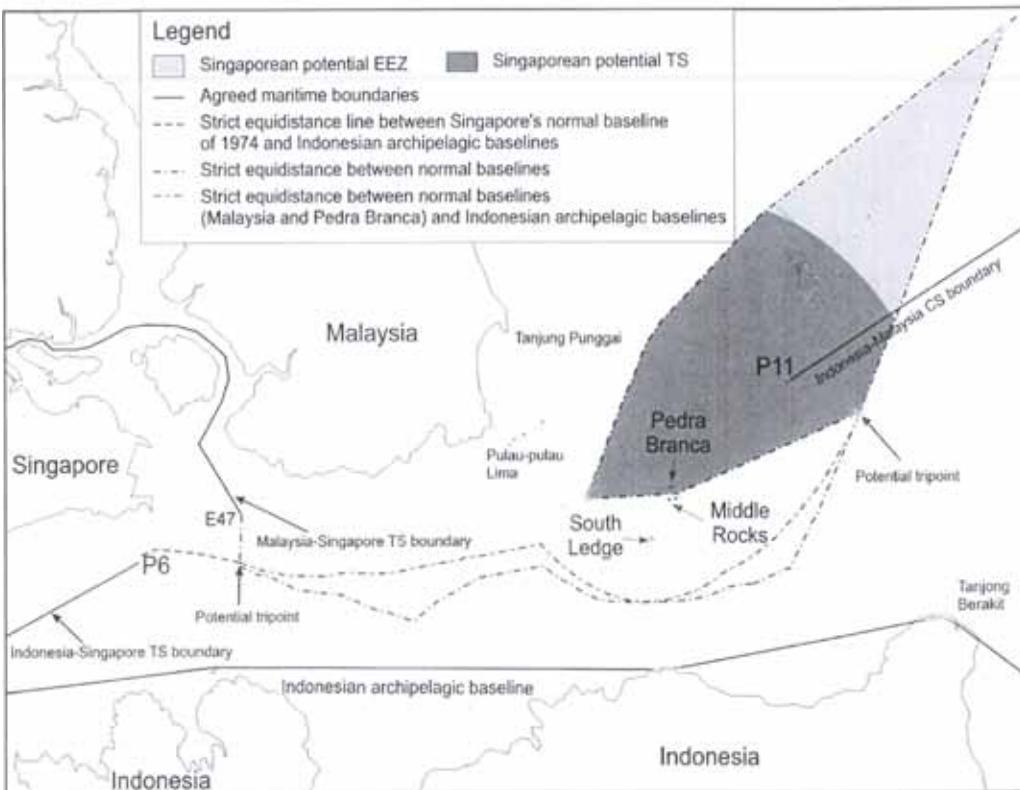
Figure 2: Maritime claim areas by Singapore

CONCLUSION

It seems most unlikely that Malaysia and Indonesia would agree to large areas of sea adjacent to Pedra Branca or to any changes in the present seabed boundaries. It would be likely that Malaysia will argue for a comparatively small marine enclave. This obvious solution would first involve drawing an east-west line between Perdra Branca and Middle

Rocks. Then it would be possible for Malaysia to propose a 6 nautical mile line centred just south of Pedra Branca. Possibly Malaysia would then agree to a semi-circle of sea and seabed surrounding Pedra Branca, with a diameter of 6 nm and a radius of 3 nm as shown at Figure 3.

It is not known whether there is any urgency in finally settling the boundary. However it is to be hoped that the two parties will be able to settle the construction of a boundary, without protracted difficulties.
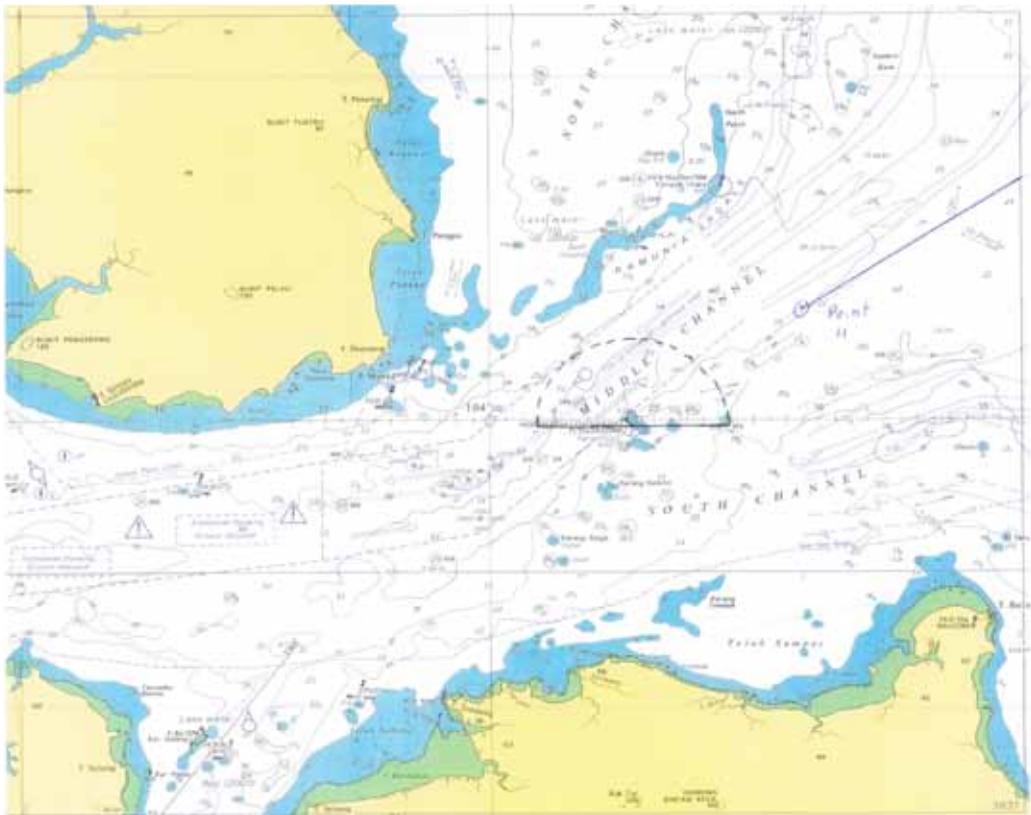

Figure 3: The zone which Malaysia and might agree with Singapore's claim.

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PREVENTIVE DIPLOMACY IN THE SOUTH CHINA SEA: MALAYSIA'S PERSPECTIVE

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ABSTRACT

The South China Sea is a semi-enclosed sea containing hundreds of islets, atolls, cays, reefs, rocks, shoals, includes four archipelagos, and is a vital sea lane of communication for international trade that links East Asia to the Middle East and Europe through the Straits of Malacca. Disputes in the South China Sea have been a source of conflict for the past 30 years among the claimant states. On 4 November 2002, ASEAN and the People's Republic of China signed the Declaration on the Conduct (DOC) of Parties in the South China Sea which among other things provide for the promotion of trust and confidence among the parties by exercising self-restraint in conducting their activities in disputed areas and to resolve issues peacefully. Notwithstanding the DOC, all claimant states have embarked on expanding their maritime forces. Given the Spratly dispute has become increasingly tense recently, there is a need to look for means beyond the DOC to ensure that tensions do not spill over into open conflict between claimants. This study suggests that ASEAN has to play a stronger role to promote preventive diplomacy in the SCS in order to avoid and manage the dispute. To this end, four options can be considered namely increasing confidence building measures among navies operating in the SCS, enhancing the role of the diplomatic good office, promoting early warning of conflict situations, and embarking on preventive deployment.

Keywords: South china sea, spratly islands, declaration of conduct of parties, asean, confidence building measures

INTRODUCTION

The South China Sea (SCS) is a semi-enclosed sea which contains hundreds of islets, atolls, cays, reefs, rocks, shoals and includes four archipelagos, i.e., the Pratas, Paracels, Macclesfield Bank and Spratlys. The Spratly archipelago derives its importance from its potentially rich natural resources, such as oil & gas, minerals, and rich fisheries, strategic military value and as a vital sea lane of communication for international trade linking East Asia to the Middle east and Europe through the Straits of Malacca. Malaysia has its interest in the Spratly Islands because of its location within Malaysia's Exclusive Economic Zone (EEZ) and as part of its continental shelf. There are five other littoral states that have territorial claims over the Spratly Islands, namely China, Taiwan, Vietnam, the Philippines, and Brunei.

The overlapping claims in the Spratly Islands are a major contributor to naval modernisation in the SEA region. Various uncertainties, in particular the military build-up by China has made some ASEAN states wary of Beijing making them active in major arms acquisition programmes. Although Spratly claimants have an interest in peace and stability in the region, each has strategic interest in strengthening the features that they occupy and the waters they control. Till noted that, "Spratly and Paracel Islands and the South China Sea generally, strategically important, as places to protect and refurnish naval presence to protect and refurnish naval forces" [1]. A strong naval presence in the claimed disputed area is thus crucial for every claimant. Nevertheless, the increasing naval presence and incidents involving China and Vietnam, and China and Philippines in recent years has security implications for the stability in the South China Sea. Indeed, Mark Valencia predicted that the South China Sea disputes "may get worse before they get better, and that they will be influenced by competition and tensions between big powers [2].

On 4 November 2002, ASEAN states and the People's Republic of China (PRC) signed the Declaration on the Conduct (DOC) of Parties in the South China Sea which, among others, provided for the promotion of trust and confidence among the parties by exercising self-restraint in conducting their activities in the disputed area, involving dialogues and exchange of views, exploring cooperative activities, and others that will help to resolve issues peacefully. Despite such peaceful intentions, there is not much progress along the line envisioned in the DOC to bring peace to the area. There is, however, some cooperation in the areas such as hydro graphic research and among the oil companies exploring in the area that have agreements with different claimant states. Notwithstanding their agreement to the DOC, all claimant states have been involved in expanding their maritime forces. Given the Spratly dispute has become more tense recently, there is a need to look for means beyond the DOC to ensure that tensions do not spill over into open conflict. The intention on this study is not to discuss in detail the history of the sovereignty claims and its legal merits, but firstly, it will provide a brief background to the claims and describes the current disputes in the Spratlys. Secondly, the study will review the past and current approaches adopted to ease tensions among the claimants and asses their success in managing the conflict, and finally, the study suggests options to pursue preventive diplomacy to manage conflicts.

A BRIEF HISTORY OF SOUTH CHINA SEA DISPUTES

China's Claim

China claims sovereignty over all the features in the Spratly Islands and has incorporated them into its provincial administrative system. On several occasions since the 1930's the Chinese government has provided the geographical scope of China's Nansha Islands. In 1947, China's Nationalist government put forward its claim to virtually all the South China Sea as outlined by the nine dotted lines [3] The PRC included the Paracel and Spratlys into a new Chinese province called Hainan province in

1988 [3]. China uses provisions of the 1982 UNCLOS, the Law of the Peoples Republic of China on the Territorial Seas and the Contiguous Zones (1992), the Law on the Exclusive Economic Zone and the Continental Shelf of the People's Republic of China (1998), and claims that China's Nansha Islands (Spratlys) is fully entitled to territorial seas, exclusive economic zones and the continental shelf. China occupies seven features in the Spratlys – Chigua Reef, Cuarteron Reef, Fiery Cross Reef, Gaven Reef, Johnson Reef, Mischief Reef, and Subi Reef [4].

Malaysia has been supportive of bilateral discussion on the issues in the SCS with China. Nonetheless Malaysia has overlapping claims with China in the Spratly Islands and has ruled out the possibility of a conflict in the area. This is due to Malaysia's advantage of being farthest away from mainland China compared to the other claimants enabling her to retain a positive position and to exclude any direct confrontation with China. However, the recent Malaysia-Vietnam Joint Submission on the outer limits of the continental shelf beyond 200 nautical miles to the Commission on the Limits of the Continental Shelf triggered objections from China who warned claimants to earnestly observe the DOC and refrain from taking actions that may complicate and aggravate the issue.

On 14 May 2009, Malaysia's Prime Minister stated that Malaysia will seek to resolve any territorial disputes with China through negotiations in accordance with international law. He was confident that if procedures were followed, claims over disputed territories could be solved [5]. Malaysia views Beijing's design and intentions in the region as a strategic adjustment to suit China's re-emergence as a major power. During the Asia Pacific Roundtable 2011 Malaysia's Deputy Prime Minister stated that China has to be sensitive to regional concerns and employ its growing power and influence judiciously. Malaysia applauded China's "peaceful development" and her willingness to work with ASEAN to formulate a Code of Conduct (COC); nevertheless, he admitted that a binding and working COC will go a long way towards ensuring stability in the SCS.

Malaysia's Claim

In 1979 Malaysia published a map defining the limits of her continental shelf claim that enclosed several Spratlys features. In "*The Spratlies: What can be done to enhance confidence?*" Hamzah said that Malaysia's claim is presumably based on the conviction that the islands are situated on its continental shelf, well within its declared exclusive economic zone [6]. Malaysia has maintained effective occupation and naval stations in the claimed features, conducted Marine Scientific Research (MSR) and built navigation safety aids in its adjacent SLOCs. Malaysia has staked claims to eleven features in the southeastern portion of the Spratlys including Commodore Reef, Amboyna Cay, Southwest Shoal, Ardasier Breakers, Glocester Breakers, Mariveles Reef, Barque Canada Reef, Lizzie Weber Reef, Northeast Shoal, Glsgow Shoal and North Viper Shaol [7]. Malaysia has occupied eight of the features it considers within its continental shelf (see Table 1). The Royal Malaysian Navy has stations on five features i.e., Ardaseir Reef

(*Terumbu Ubi*), Mariveles Reef (*Terumbu Mantanani*), Erica Reef (*Terumbu Siput*), and Investigator Reef (*Terumbu Peninjau and Swallow Reef (Pulau Layang-Layang.*)

The Malaysia and Vietnam Joint Submission

On 6 May 2009, Malaysia and the Socialist Republic of Vietnam made a joint submission to the Commission on the Limits of the Continental Shelf (CLCS), in accordance with Article 76, paragraph 8, of the 1982 UNCLOS, information on the limits of the continental shelf beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured in respect of the southern part of the South China Sea [8]. It should be noted that the 1982 UNCLOS entered into force for Malaysia on 13 November 1996 and on 16 November 1994 for Vietnam. Upon completion of the consideration of the submission, the Commission will make recommendations pursuant to Article 76 of the Convention.

China's Protest

The joint submission was made about a week before the May 13 deadline set by the United Nations for countries to submit claims over extended continental shelves. On 8 May 2009 the Chinese Permanent Mission to the United Nations presented a note to the UN Secretary-General which urged the CLCS not to review the joint submission by Malaysia and Vietnam [9]. The protest inferred that the claim infringed upon China's sovereignty, sovereign rights and jurisdiction in the South China Sea. The Government of China urged in the note that the CLCS not to consider the joint submission of information in accordance with the UNCLOS and the Rules of Procedure of the CLCS. The Philippines also objected to the Malaysia-Vietnam submission [10].

The Philippine's Claim

The claim by the Government of the Philippines to the Spratly Group, based on geographical proximity and the concept of *terra nullius*, was first expressed in the United Nations General Assembly in 1946 [11]. The Philippines' claim in the Spratly Islands area, known as the Kalayaan Islands, is based on discovery and geographical continuity. The territorial waters of the claim were declared by President Marcos in Presidential Decree 1596 on 11 June 1978 [12]. The claim was further reinforced in the Philippines Archipelagic Baselines Act (Republic Act No. 9522) on 11 March 2009 [13]. The enactment of this legislation was to project the position that the Philippines has dominion, sovereignty and jurisdiction over all portions of the national territory as defined in the 1978 *Constitution of the Republic of the Philippines* and by provisions of applicable laws including, without limitation, Republic Act No. 7160, otherwise known as Local Government Code of 1991. The new Act classifies the Kalayaan Island Group as a 'regime of islands under the Republic of the Philippines' inferring that the Philippines' continues to lay claim over the disputed islands. It is presently in control of nine facilities that are considered parts of the Municipality of Kalayaan: Ayungin (Second Thomas) Shoal, Kota (Loaita) Island, Lawak (Nanshan) Island, Likas (West York) Island, Pag-Asa

(Thitu) Island, Panata Island (Lankiam) Cay, Parola Island (Northeast Cay), Patag (Flat) Reef, and Rizal (Commodore) Reef [14].

Malaysia occupied Investigator Shoal (Terumbu Peninjau) and Erica Reef (Terumbu Siput) in 1999 and had by that time built a two-storey structure, helipad, pier and radar antenna on the features. China, Vietnam and the Philippines protested Malaysia's action. The Philippines in particular sent a diplomatic protest to Malaysia stating that Malaysia had breached the 1992 ASEAN Declaration. However, Malaysia's action in the features were not meant to infringe the Declaration but aimed at climatic research, marine life studies and as navigational aids, and that those actions on the features were within Malaysia's EEZ.

Vietnam's Claim

Vietnam claims the entire Spratly Islands group based on historic grounds, and as such, claims all 11 islands and other marine features occupied and claimed by Malaysia. In 1977, Vietnam published its statement on Territorial Sea, the Contiguous Zone, the Exclusive Economic Zone and Continental Shelf. Vietnam made a Declaration when it ratified UNCLOS in 1994 and reiterated Vietnam's sovereignty over the Hoang Sa and Truong Sa archipelagos. It currently has possession of six islands, 17 reefs and three banks and of these; an island and a reef - Amboyna Cay and Barque Canada Reef/Lizzie Weber Reef - are also claimed by Malaysia. Malaysia protested to Vietnam's claims on Swallow Reef in 1982 by declaring the new limits of its territorial waters and occupied Swallow Reef in 1983 and has maintained effective occupation since then. There is currently no boundary agreement between the two countries. The continental shelf claim limits of the two countries do not coincide because of the different maritime baselines each country uses to calculate the equidistant line. This has resulted in an area of overlapping claims.

The two countries, however, signed a *Memorandum of Understanding between Malaysia and the Socialist Republic of Vietnam for the Exploration and Exploitation of Petroleum in a Defined Area of the Continental Shelf involving the Two Countries* on 5 June 1992 [15] that allows joint exploitation of natural resources in the area of overlapping claims. The western portion of the overlapping claim area is also claimed by Thailand and is currently included in the Malaysia-Thailand joint development area although the Defined Area established under the 1992 MOU does not include this area. In 1999, all three countries agreed in principle to jointly develop this area using joint development principles. The 2009 Malaysia -Vietnam Joint submission though did not define the extended continental shelf claim of each country. It however defined the area which both countries were jointly claiming and the area that the two countries had reached a broad understanding as to the apportionment of the defined area. The joint development area by the two countries provides that all fossil fuel resources in the area be shared between Malaysia and Vietnam.

Taiwan

Taiwan's claims are similar to those of China, and are based upon the same principles. As with China, Taiwan's claims are also not clearly defined. Taiwan occupies Pratas Island and Ita Abu in the Spratly Group. From 1932 to 1935 the Republic of China (Taiwan) re-claimed sovereignty over the islands, re-named some 159 islands in the area and published the Map of the South China Sea Islands.

Brunei

Brunei claims part of the southern sector of the South China Sea nearest to it as part of its natural continental shelf and Exclusive Economic Zone. In 1984, Brunei declared an EEZ that encompasses Louis Reef. Brunei has claimed a continental shelf/exclusive economic zone stretching 200 nautical miles from its coast, which extends Brunei territorial waters deep into the middle of the South China Sea. Until 2009, Malaysia did not recognise Brunei's EEZ claim and states that Brunei's maritime territories ended at the 100-fathom isobath provided in the North Borneo (Definition of Boundaries) Order in Council 1958 and Sarawak (Definition of Boundaries) Order in Council 1958 [16]. In 2000, Brunei had awarded a concession for a petroleum block called Block J to Shell, Mitsubishi and ConocoPhillips and Block K to France's Total, BHP Billiton and Hess Corp. Subsequently in 2003, Malaysia's national petroleum company Petronas awarded concessions to its subsidiary Petronas Carigali Sdn Bhd and US-based Murphy Sabah Oil Co. Ltd for two areas, which Malaysia calls Block L and Block M (see Figure 1) [17] which lie exactly within the area claimed by Brunei as part of its continental shelf/EEZ.
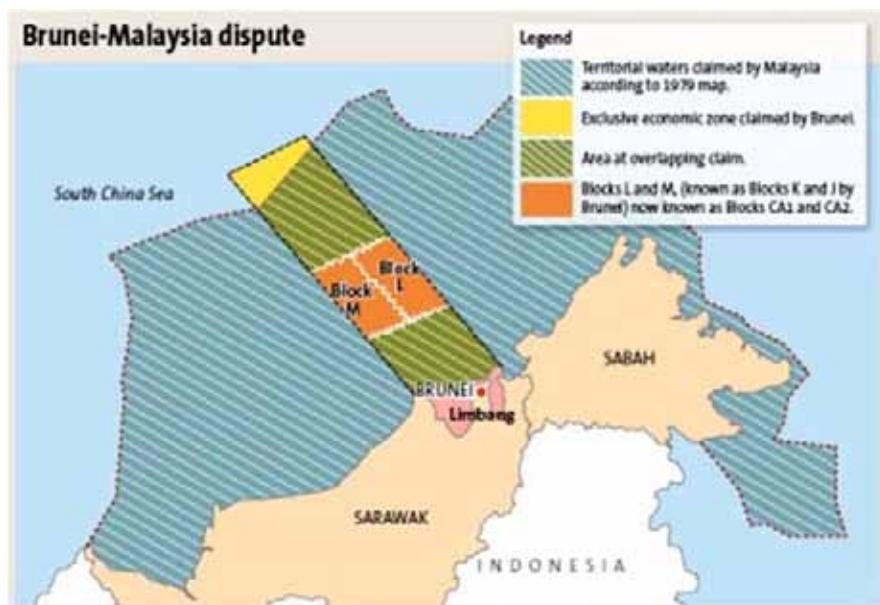
Figure 1 : Brunei-Malaysia Commercial Arrangement Area Map
Source: David M.Ong, Essex University Law School (UK),

In March 2003, a Bruneian gunboat was sent to drive away a Murphy company drilling ship in the area. The following month, the Malaysian navy sent several gunboats into the disputed area to block the arrival of a Total ship. After a tense stand-off involving a single patrol craft from Brunei, Total backed off and both sides stopped work in the disputed areas. On 16 March 2009, the two countries signed the Exchange of Letters to end all territorial disputes between Brunei and Malaysia [18]. The Exchange of Letters which provided for the final settlement of maritime boundaries between the two countries establishes a joint commercial arrangement area for the two countries to share the proceeds from the exploitation of hydrocarbon resources in the disputed area.

CLASHES AMONG CLAIMANTS

The 2002 ASEAN Declaration of the Conduct of the Parties in the South China Sea imposed on all claimants to the Spratly Island Group the need to refrain from any action that could heighten tensions, including military build-ups and construction work. However, tensions rose in the Spratly when the Philippines announced its New Baselines Act in July 2009. The Act classifies the Kalayaan Island Group as a 'regime of islands under the Republic of the Philippines' inferring that she continues to lay claim over the disputed islands. On 16 March 2009, China defended its action of sending a patrol ship to the disputed Spratly Group, stating that it was not a violation of an agreement to maintain the peace in the area.

The Philippines and Vietnam have been especially alarmed by recent developments in the South China Sea such as the establishment of a Chinese submarine base in Yulin on Hainan Island and increasing Chinese naval activities.

China Factor

China's "soft power" is considered to be a fundamental aspect of an effective foreign policy based on the concept by Chinese philosopher, Lao Tzu that "*whatever is soft is strong*". The soft power concept was described as "the ability to achieve desired outcomes through attraction." China's soft power and charm approaches towards Southeast Asia is linked to its position in the South China Sea since signing of the 2002 ASEAN-China DOC and the peaceful rise of China in the Asia-Pacific Region. The Chinese Foreign Ministry repeatedly said that China would always seek a bilateral solution to disagreements on the SCS, and not use or threaten the use of force. Further, China announced that she is committed to work together with all parties to effectively implement the DOC in the SCS and maintain stability in the region. China has declared on many occasions that it takes a path of peaceful development and is committed to upholding world peace and promoting common development and prosperity for all countries [19]. However, recent developments in the SCS belie the Chinese charm approaches as well the soft power concept.

Security analyst have noted China's foreign policy of less charm, more offensive and being increasingly assertive on the international stage and using her growing economic and military strength to support its regional and international diplomacy. Nonetheless, according to Chinese scholars, China's assertiveness in the SCS is nothing new and that it is normal for any country to be assertive to defend its sovereignty.

Recently, an article in the Chinese-language edition of the Chinese Communist Party-run *Global Times* noted that it is time for China to strike the Philippines and Vietnam. The comments on "A good time to take military action in the South China Sea," [20] urged Beijing to declare war on Vietnam and the Philippines, two countries that have been proactive in defending their claims over the islets. The Chinese Ministry of Foreign Affairs did not comment on the report but reiterated the government's position that the Spratly Islands, Paracel Islands, Macclesfield Islands, Pratas Islands and nearby waters were part of Taiwan's territory and territorial waters, and called on claimants to peacefully resolve disputes surrounding the region through negotiations and dialogue.

China and Vietnam

All claimants except for Brunei maintain a military presence in the Spratly archipelago and about 40 features are used as bases for military personnel or other installations. In 1974, China demonstrated her resolve to use force to remove Vietnamese personnel off certain islands. The naval component of the People's Liberation Army (PLA) has since 1980 gradually strengthened its air and sea capabilities in the South China Sea by having in-flight refueling support capability so as to project limited airpower. To be used as a springboard to the Spratly archipelago, China recently established an airfield on Woody Island in the disputed Paracel Group. China's neighbours have been particularly concerned about the growing strength of the Chinese Navy, including plans for an aircraft carrier, with implications for the exercise of power by a blue-water navy in the South China Sea. In 1988, China and Vietnam engaged in the most violent clash that resulted in the sinking of some Vietnamese transport ships [21].

In October 2011, China and Vietnam signed a six-point agreement on basic principles guiding the settlement of existing maritime issues between the two countries [22]. The agreement among others provides that the two countries should remain committed to friendly consultations to properly handle maritime issues and make the South China Sea a sea of peace, friendship and cooperation. Both sides should seek steady progress in negotiations regarding the maritime demarcation of the baymouth of the Beibu Gulf and discuss joint development of the sea area. Both sides should promote maritime cooperation in less sensitive fields, including marine environmental protection, scientific research, search and rescue, and disaster reduction and prevention. Both sides agreed to set up a hotline mechanism to allow them to promptly communicate and deal with maritime issues.

China and Philippines

As noted by Rowen, China and the Philippines had clashed over disputed territory on the South China Sea on five separate occasions in the 1990s [23]. This includes the Chinese occupation in the Mischief Reef and building of fisherman's structures over these half-submerged atolls and clashes between the People's Liberation Army-Navy (PLAN) and Philippine fishermen near Scarborough Shoal over the placement of Chinese markers in the area. In February 1995, the Philippines Government informed the international community of China's occupation of Mischief Reef, a reef claimed by the Philippines. The reef lies about mid-way between China's mainland and the Philippines' Palawan Island. Construction on the reef according to the Chinese version was for the safety of their fishers operating in these waters. However, four concrete guard posts with satellite communication capability and armed warships stationed in the immediate vicinity indicated otherwise. Although no direct action was taken against Mischief Reef, the Philippines removed Chinese markers from two other reefs, Halfmoon and Jackson, both claimed by the Philippines. China and the Philippines have accused each other of inciting trouble by alternatively placing or removing markers, setting up outposts and occupying islands and reefs in the South China Sea. The reefs named are Scarborough Reefs and numerous islands. Scarborough Reef is located some 110 nautical miles west of Luzon Island and lies outside the Philippines' territorial sea baseline system but within her EEZ.

On 18 May 1997, a Philippines naval ship was despatched to "guard" the reef and on 26 May, discussions between the foreign ministers of both states were held. But, at the same moment, some members from the Philippines Congress were allegedly planting the country's national flag on Scarborough Reef. The episode was apparently not authorised by the Philippines Government. The following week a Philippines patrol boat detained Chinese fishermen about five nautical miles from the shoal and impounded their fishing vessel.

The Chinese-Philippines wrangling over the disputed islands became critical on 9 May 1999 when a Philippines naval ship ran aground on Second Thomas Shoal (Huangyan Island) and on 10 November 1999 when another naval ship grounded on Scarborough Reef, about 125 nautical miles west of Zambles Province. The former-named feature is part of the Spratly archipelago and lies within the Philippines' 200-nautical mile arc (EEZ), but China claims sovereignty over that feature. Scarborough Reef is the only outcrop outside the Spratly Group being disputed by both China and the Philippines. A number of Chinese fishermen have allegedly been arrested near the disputed reef.

Recent Disputes

Antrim in "Creeping Jurisdiction Must Stop" said that SCS has become an area of tension both for the coastal states and to the United States. The United States Energy Information Administration data for the period 1974-2001 includes [24] four incidents or armed confrontations at sea between China and Vietnam, eight shooting incidents

between Chinese and Philippine warships, three incidents between the Philippines and Vietnam and one incident each between the Philippines and Malaysia and between Taiwan and Vietnam.

In 2001, a Chinese jet collided with a US Navy EP-3E Aries II as it was patrolling above the Exclusive Economic Zone (EEZ) about 70 nautical miles from the Chinese submarine base on Hainan Island off the Paracel Island. In the incident the Chinese lost its jet and pilot and forced the emergency landing of the U.S aircraft on the island.

In December 2002, China announced that it had enacted a new law explicitly requiring Chinese approval of all surveys and mapping activities in China's EEZ [25]. This statement was made due to the collection data activity which was carried out by the US Navy's unarmed hydrographic survey vessel *Bowditch* in the Yellow Sea of China's EEZ on 24 March 2001 [26]. The same survey vessel was reported to return to the Chinese EEZ in September 2002 and was harassed by Chinese ships and planes. A formal diplomatic protest was lodged by the Chinese over the incident.

In March 2009, five Chinese vessels were reported to have harassed the US Navy Surveillance Ship *Impeccable* that was conducting routine surveys in the South China Sea. Pentagon reports mentioned that the *Impeccable* was shadowed by five ships, including a Bureau of Marine Fisheries Patrol Vessels, a State Oceanographic Administration patrol vessels, a Chinese Navy ocean surveillance ship, and two small Chinese-flagged trawlers. The Chinese vessels were reported to conducted maneuvers 50 feet (15m) from the US ship, waving the Chinese flag and ordering the US ship to leave the area. The Chinese vessels were accused of stopping directly in front of the *Impeccable*, forcing it to make an emergence stop to avoid a collision. However, the Chinese Foreign Ministry says that US Navy Ship *Impeccable* was conducting activities in China's Exclusive Economic Zone in the South China Sea. As such, it maintains that it may prohibit non Chinese naval vessel from operating in that area. This incident reflects that China has staged dangerous maneuvers to force the US vessels off the Hainan Island near the Paracel islands administered by China, also claimed by Vietnam.

The United States lodged a formal protest following the incident based on the argument that under international law, the US military can conduct activities "in waters beyond the territorial sea of another state without prior notification or consent" including in the EEZ of another country. The US said that the Chinese conducted unprofessional manoeuvres and violated the requirement under international law to operate with due regard for the rights and safety of other lawful users of the ocean.

In early 2011, Chinese vessels erected posts and unloaded construction materials on and near a reef near the coast of Palawan, and the Philippines navy had dismantled the markers. Chinese naval vessels were reported to have harassed a seismic survey ship working for a British firm under contract with the Philippines. There was a near collision when Philippines military plane was sent to fly over the area, fortunately there were no

incidents and the Chinese withdrew. Nonetheless, a new round of surveys is due to start in 2012 and could set up another potential confrontation.

There were two incidents in May and June 2011 in which Vietnam accused Chinese fishing vessels supported by two Chinese fishery administration vessels of severing cables to *Viking II,* [27] a vessel hired by the Viet Nam Oil and Gas Group conducting 3D seismic exploration in Vietnam-claimed continental shelf. The first incident was in May 2011 in which a Chinese maritime surveillance vessel cut the exploration cables of *Binh Minh 02* seismic vessel of Viet Nam National Oil and Gas Group (PVN) while it was conducting seismic survey in the continental shelf of Viet Nam [28]. The Chinese claimed such events were accidental or provoked by what they called Vietnam's unilateral oil exploration. China has insisted that countries should only explore jointly in the region. China pointed out that Vietnam grossly infringed China's sovereignty and maritime rights and interests by exploring oil and gas illegally in the Wan'an Bank waters and chasing away Chinese fishing boats [29]. China urged Vietnam to stop all actions that violate China's sovereignty, endanger Chinese fishermen's life and property, safety, and complicate and expand disputes. In this regard, China requested the Vietnamese give due effort to safeguard peace and stability of the SCS.

In October 2011, a Philippine Navy vessel rammed a Chinese fishing boat that was reportedly "poaching" within Manila's EEZ [30]. The Philippine ship BRP *Rizal* collided with a Chinese trawler off Reed Bank after the fishing vessel was spotted towing 35 smaller, unoccupied boats. The Philippines vessel got entangled in one of the smaller boats' lines and suffered a steering failure, which caused the collision with the main fishing trawler. However, an apology was delivered to the Chinese embassy in Manila, and there was no word of the incident in the Chinese press. Chinese and Filipino naval ships both patrol the area and there is likelihood of future clashes so long as the area remains contested.

The Philippines and Vietnam are seeking US intervention in the South China Sea in reaction to China's behavior towards them. The Philippines Foreign Secretary visited Washington in June 2011 to seek US support in the midst of growing territorial dispute with China in the SCS. The visit was aimed at "clarifying" the Mutual Defence Treaty between the Philippines and the US and to request US assistance to beef up the Philippine navy. Vietnam, on the other hand, conducted live-fire exercises in the waters near Hon Ong Island on 13 June and also staged anti-China demonstrations outside the Chinese Embassy in Hanoi and in Ho Chi Minh City. Vietnam and the Philippines were alarmed by the increasing aggressive actions by the Chinese. This development suggests that there seems to be a shift in China's approach from "soft power" diplomacy to a more assertive approach at the international level using her growing economic and military strength in its regional and international diplomacy. Nonetheless, according to Chinese scholars, Chinese assertiveness in the SCS is nothing new as she seeks to defend her sovereignty.

United States' Involvement

There are two major reasons for US involvement in the SCS which is one of the most strategic waterways in the world. First, is to safeguard freedom of navigation which the US promotes for military activities. China has a unilateral nine-dashed line claiming the entire SCS basin. If this claim was to be accepted, freedom of navigation in SCS for US in particular will be challenged. Safety of navigation and over-flight and the freedom of sea lines of communication are of critical strategic interests of the US which uses the SCS as a transit point and an operating area for the US Navy and Air Force between military bases in Asia and the Indian Ocean and Persian Gulf areas. Secondly, the US has always been interested in the area as it offers the shortest route from the Pacific to the Indian Ocean and because it is essential for the movement of US naval fleets either for its own global strategy or for the purpose of defending its allies in the region.

In 1995, the US Department of State announced US policy on the South China Sea which stated that the US urges peaceful settlement of the issue by the states involved [31] that the US strongly opposes the threat or use of military force to assert any nation's claim in the South China Sea; the US takes no position on the legal merits of competing sovereignty claim; the US has a strategic interest in maintaining maritime line of communication, and that the US strongly supports multilateral dialogue. More recently, Admiral Robert F. Willard, Commander, US Pacific Command testified before US Congress that there would be lessening of confrontation in first quarter of 2011; however, the recent escalation of clashes between Vietnam and China in the SCS represents a continued challenge to all claimants as well pose disruption to the free flow of commerce. At present, about 10 percent of the 500-600 US ships operating from the Pacific are in the SCS and the US navy's continuous presence in the SCS is inevitable to protect transit passage and the commerce [32]. On a related matter, the US Senate approved a resolution that "deplores the use of force" by Chinese maritime and naval vessels in SCS territorial disputes [33]. The Senate also supported the continuation of the United States Armed Forces operations in support of freedom of navigation rights in international waters and air space in the SCS.

On the other hand, with the appointment of a Permanent Ambassador to ASEAN there has been growing US relations with ASEAN. More specifically, US and Vietnam relations have been growing over the last 15 years and are based on strong engagement by the business community. Vietnam has openly suggested US to intervene in the SCS. The US Secretary of State stated at the ASEAN Regional Forum in 2010, that the US willingness to mediate in the SCS dispute is based on US national interest in freedom of navigation and open access to Asia's maritime commons [34]. Scholars view the US action as an effort to draw ASEAN or some of its members together with Australia, Japan and South Korea into a soft alliance to constrain if not contain China. China, in the meanwhile, has warned US against its involvement in the intensifying disputes in SCS.

Japan

For Japan, the SCS and its most important approaches, especially the Straits of Malacca and Singapore, are extremely important for its economic and strategic interests since more than 80 percent of its oil imports and a significant amount of its shipping and trade with Southeast Asia, South Asia, Africa, the Middle East and Europe are through these waterways. Japanese interest in the preservation of peace and co-operation in the South China Sea may also increase as a result of its new orientation and increasingly intensive relations with ASEAN/ Southeast Asian countries.

Japan and the Philippines agreed to strengthen maritime security ties, while also underscoring the importance of preserving peace and stability in the South China Sea amid rising tensions with China. Philippine President Benigno Aquino III and Japan Prime Minister Yoshihiko Noda agreed that the two sides be committed to bolstering "cooperation between coastguards and defense-related authorities [35].

India

As India aspires to a global role and as a strategic partner to the US, it has stepped into the SCS conundrum. India has become a largest economy in the world and has commercial and trade interest in the Asia Pacific. It has also strategic interest in ensuring the SCS remains a SLOC. Indian and Vietnam initiated an exploration project by Indian state-owned company Oil and Natural Gas Corporation Videsh Limited (ONGC Videsh) in two offshore blocks that Vietnam claims. The Indian government indicated it has taken into consideration the position of China and Vietnam before allowing ONGC Videsh to enter into business contract with Vietnamese firms. India is concerned with a rising China and has been supportive of US and Japanese efforts to uphold the freedom of navigation and over-flight in the SCS. However, China views this as an infringement of "China's sovereignty and national interest". China has warned against India's plan to explore for oil and gas in the area and that any move by countries outside the South China Sea region will "complicate and magnify the dispute" that Beijing has with the Vietnamese government. The Indian exploration company said that there are plans to restart drilling in 2012. On that note, the Indian Ministry of External Affairs said that the block is well within the territory of Vietnam and so there are no issues with exploration there. Vietnam on the other hand said that cooperation projects in oil and gas between Viet Nam and its foreign partners, including those in Blocks 127 and 128, lie within its EEZs and continental shelf and are completely under Vietnamese sovereignty, sovereign rights and national jurisdiction, in line with the 1982 UNCLOS [36].

PREVENTIVE DIPLOMACY

The recent incidents between the US and China and China and Vietnam, the joint submission by Malaysia-Vietnam in 2009, and the new Philippines Archipelagic Baselines Act are burning developments in "rough seas". Scholars and policy makers

generally agree that the settlement of territorial disputes and overlapping maritime claims in the SCS will not be an easy agenda, at least not over the short term. As such it is essential that parties involved in the disputes continue to adopt more forward looking regional cooperation. This is best pursued through preventive diplomacy in managing the disputes and conflicting interest of claimants and non-claimants in the SCS. The option for preventive diplomacy in the SCS is not new; it has been adopted as a conflict resolution mechanism since the early 1990s. Weissmann argues that the South China Sea conflict has been a successful case of conflict prevention, and in fact, that a transformation has occurred, from a fragile peace to a more stable peace [37]. Despite the relative peace in the SCS and the efforts to keep the situation calm, claimants and non claimants' assertiveness and strong interests in the SCS has brought the subject to the forefront of maritime discussion. The South China Sea dispute is becoming an increasingly important subject that needs immediate attention through preventive diplomacy to forestall any opportunities for open conflict in the region.

Preventive Diplomacy (PD) is conducted by international organizations with the help of other international governmental as well as non-governmental actors. The strategy includes a range of peaceful dispute resolution methods mentioned in Article 33 of the UN Charter when applied before a dispute crosses the threshold into armed conflict: negotiation, enquiry, mediation, conciliation, arbitration, judicial settlement, resort to regional agencies or arrangements, or other peaceful means of choice. PD is mostly perceived as an instrument to increase international stability and security, the main goal being to prevent tensions from causing and spreading domestic and international enmity, and to assist countries involved in solving problems in conformity with international law and other agreed standards. The then UN Secretary General, Boutros Boutros-Ghali, defined PD in his June 1992 *Agenda for Peace - Preventive diplomacy, peacemaking and peace-keeping* as "the use of diplomatic techniques to prevent disputes from arising, prevent them from escalating into armed conflict if they do arise, and if that fails, to prevent the armed conflict from spreading" [38]. After the end of the cold war, PD took a broader paradigm that focused on the prevention of civil wars, ethnic conflicts, state failure, gross violation of human rights and humanitarian emergencies.

A brief discussion of the functions of PD is provided by Tivayanond [39] who described the specific mechanism that refer to a series of activities including early-warning, diplomatic good offices, confidence-building measures and preventive deployment measures.

Early Warning of Conflict Situations

The function of early warning involves the collection and utilization of information that can provide a timely alert to potential conflict. It is important to be aware of a potential conflict and involves analyzing tensions deriving from political, economic or social backgrounds and how they originate and gain momentum. Research into the means by which violence is achieved is critical and this may involve observation of armament

supplies, troop movements, overall military capability, fuel and logistical support movements, and even sources of arms procurement funding.

Diplomatic Good Office

Tivayanond describes the use of diplomatic good office (DGO) as an underrated activity of preventive diplomacy, which is defined as diplomatic initiatives put into action especially in times of a looming crisis or violent confrontation. The role of DGO would be to engage in diplomatic activity by a particular entity that possesses a unique political position or quality of being able to work with and be accepted by parties involved in disputes. The DGO takes in the form of goodwill missions, peace commissions and special envoys conducted by an entity not involved in the disputes. The DGO act includes facilitation, mediation, conciliation or arbitration to put an end to violent confrontation and to confine issues within domain diplomacy and not pre-impose any intervention measures. Fundamental is that those who offer the DGO, depending on the case, are distinguished politicians, senior diplomatic officials, a prestigious research institution, elder statesmen or academics and should be prepared for conflict at the inter-state and intra-state level. Nonetheless, the DGO may be provided by a well informed and familiar network of diplomatic and academic officials who contribute to a Track Two or unofficial security dialogue forum. The role of the DGO depends heavily on the credibility of the good officer and the timing of action in the aspect of preventive diplomacy.

Confidence Building Measures (CBM)

There are many interpretations of CBM but basically they seek to reduce the chances of unintended conflict and enhancing assurance between states of their peaceful intentions. CBM can also be applied to intra-state conflict prevention between government and non-government parties or between two or more non-government parties. In broader terms, the objectives of CBM are to strengthen international peace and security and to help promote trust, better understanding and more stable relations among nations [40]. The main concern of CBM is to prevent crisis through short-term preventive diplomacy; however it is focused on developing a process of co-operation between entities with the objective of a long term preventive diplomacy. If CBM are performed well, that is, if already in place then it is likely that other functions of preventive diplomacy such as mediation or preventive deployment need to come about. CBM are traditionally regarded as agreements between two or more governments [41]. CBM involves specific measures involving mechanisms to promote, restrain, and prevent misunderstanding or miscalculation between armed forces, such as exchanges of information, joint activities and achievement of mutual goals regarding the size, composition, disposition, movements and use of their respective military forces and armaments. CBM aims at reducing tensions by increasing transparency over capabilities and intentions, improving predictability for the parties involved and clarifying intentions about military forces and political activities. CBM are meant to give each navy confidence that the other(s) is not preparing for military action thereby providing a way

to avoid misunderstandings about ambiguous events, policies, or perceived threats that otherwise might result in violent confrontations.

Preventive Deployment

Preventive deployment first mentioned in *An Agenda for Peace, a document produced by the United Nation* refers to the deployment of military, police and civilian personnel in volatile areas with the objective of preventing the outbreak or escalation of a conflict. This last resort of preventive diplomacy may be premised on the effectiveness of fact-finding i.e., evidence of forthcoming violence which is used to justify an early warning, that violent confrontation is imminent. Preventive deployment is different from peace keeping as it is restricted in scale and scope and is primarily to prevent the outbreak of violence whereas peacekeeping seeks to prevent the escalation of violence once it has already occurred. Preventive deployment will inevitably be military based that has impartial identity and sufficient credibility to be accepted by disputing parties and have credible self-defence mechanisms.

ASEAN's PREVENTIVE DIPLOMACY IN THE SOUTH CHINA SEA

The Treaty of Amity and Cooperation in Southeast Asia

The Treaty of Amity and Cooperation in Southeast Asia (TAC) promotes universal principles of peaceful coexistence and friendly cooperation among states in Southeast Asia and was signed at the First ASEAN Summit in Bali, Indonesia, on 24 February 1976 by the Heads of State/Government of Indonesia, Malaysia, the Philippines, Singapore and Thailand [42]. Originally conceived as a legally binding code of friendly inter-state conduct among Southeast Asian countries, the Treaty was amended in 1987 to open it for accession by states outside of Southeast Asia. The fundamental principles guiding the signing parties in the TAC include the settlement of differences by peaceful means, non-resort to the threat or use of force and the promotion of effective cooperation among the concerned parties. In 2003, China officially became the first non-ASEAN country to join the TAC, thus encouraging her commitment to settle disputes in a peaceful manner and avoid threatening behaviour or the use of force. On 22 July 2009, the United States acceded to the TAC which was described as a symbol of the US desire to engage more deeply and effectively with ASEAN on regional and global priorities [43].

ASEAN Regional Forum Preventive Diplomacy

The ASEAN Regional Forum (ARF) was established by ASEAN in 1994 to maintain peace and stability in the region and to promote regional development and prosperity. The ARF sought to meet these challenges by putting into place a three-stage process namely the promotion of Confidence Building Measures (stage one), the development of Preventive Diplomacy (stage two) and the elaboration of approaches to conflicts

(stage three). As such, at the 4th ARF in 2001, ASEAN Ministers instructed the ARF Intersessional Support Group on Confidence Building Measures (ISG on CBMs) [44] to identify areas in the overlap between CBMs and Preventive Diplomacy, and ways and means of addressing them while maintaining the focus on CBMs. The definition of concept and principles of PD by the ARF are summarized below:

- To help prevent disputes and conflicts from arising between states that could potentially pose a threat to regional peace and stability;
- To help prevent such disputes and conflicts from escalating into armed confrontation;
- To help minimise the impact of such disputes and conflicts on the region.

The eight key principles of PD, drawn mainly from discussions in Council for Security Cooperation in the Asia Pacific are as follows:

- It relies on diplomatic and peaceful methods such as diplomacy, negotiation, enquiry, mediation, and conciliation.
- It is non-coercive - military action or the use of force is not part of PD.
- It should be timely. Action is to be preventive, rather than curative. PD methods are most effectively employed at an early stage of a dispute or crisis.
- It requires trust and confidence. PD can only be exercised successfully where there is a strong foundation of trust and confidence among the parties involved and when it is conducted on the basis of neutrality, justice and impartiality.
- It operates on the basis of consultation and consensus. Any PD effort can only be carried out through consensus after careful and extensive consultations among ARF members, with due consideration to timeliness.
- It is voluntary. PD practices are to be employed only at the request of all the parties directly involved in the dispute and with their clear consent.
- It applies to conflicts between and among states.
- It is conducted in accordance with universally recognized basic principles of international law and inter-state relations embodied, inter alia, in the UN Charter, the Five Principles of Peaceful Co-existence and the TAC. These include respect for sovereign equality, territorial integrity and non-interference in the internal affairs of states.

The South China Sea Informal Working Group

The South China Sea Workshops were a functional Track-2 approach in the context of preventive diplomacy in managing potential conflict in the SCS. The informal Workshops on Managing Potential Conflicts in the South China Sea (SCSW) were the only mechanisms for reconciliation, and acted as a feasible forum through which China could engage and cooperate with ASEAN on the SCS disputes. The first Workshop held in Denpasar, Bali, in January 1990, was an informal proceeding to create the platform for a policy oriented and possible co-operation discussion. This was a Confidence Building

Measure in the region focusing on preventing disputes in the SCS from becoming a threat to regional security. In 1991, Indonesia, with financial support from Canada, commenced an exercise of informal preventive diplomacy by inviting experts from all countries in the region to a workshop convened to discuss not maritime jurisdiction but cooperative approaches in a variety of ocean sectors.

Technical Working Groups of the South China Sea initiative have been established on such matters as marine environmental protection, legal issues, marine scientific research, resource assessment and ways for development, and proposals for cooperation. These external factors include security of the region, safety of sea lanes of communication and the right to freedom of navigation within the South China Sea basin. According to Townsend-Gault, the workshop process had fulfilled its objectives by 2000 and workshop participants had achieved agreement for cooperative initiatives in the following areas:[45]

- Biodiversity protection
- Sea level rise monitoring
- Marine scientific research information and data exchange
- Marine environmental monitoring
- Standardizing education and training standards for mariners
- A regional protocol on the exchange of hydro graphic data and information
- A joint hydrographical survey of parts of the South China Sea
- Zones of marine co-operation including different models of joint off-shore petroleum development
- Harmonisation of marine environmental laws and policies
- Fisheries stock assessment
- Exchanging information on non-living non hydrocarbon resources
- Issues arriving from the "semi-enclosed' status of the South China Sea as per Article 123 of the Law of the Sea Convention
- Regulations to promote the protection and preservation of marine habitat

The agenda for the workshop clearly states that sovereignty/jurisdictional issues would not be discussed. In the mid-1990s, the workshops did discuss the problem of military presence in the SCS and stressed the need for military transparency and confidence-building measures, including military exchanges. The SCSWs have been successful forums for policy innovation and pre-negotiation and served as a possible starting point for official negotiations. These workshops have been promoting cooperation, confidence building, and trust among the parties at conflict. The SCS Informal Working Group has created a forum in which relevant officials from the conflicting parties have been able to meet in an informal setting, thereby building relationships and trust among them. Nonetheless, the forum was unable to address practical occurrences of conflict between the claimants in the South China Sea. The inability of ARF to implement Preventive Diplomacy in the SCS is due to the divergence in attitudes of its protagonists.

ASEAN's 1992 Declaration on the South China Sea

Another regional initiative in managing conflict in the South China Sea is the ASEAN 1992 Declaration on the South China Sea (1992 Manila Declaration) which emphasizes "the necessity to resolve all sovereignty and jurisdictional issues pertaining to SCS by peaceful means, without resort to force." Vietnam, not a member of ASEAN then, expressed support, while China's action has run counter to the Declaration in which all claimants to the Spratly Archipelago pledged themselves to the peaceful settlement of territorial disputes and to avoid further militarisation of the islands. The Mischief Reef episode demonstrates that the South China Sea basin is by far the largest and most dangerous maritime dispute in the Southeast Asian region.

Declaration on the Conduct of Parties in the South China Sea

The foreign ministers of ASEAN expressed their serious concern over developments that could affect peace and stability in the South China Sea in March 1995. They urged all concerned to remain faithful to the letter and spirit of the July 1992 Manila Declaration which had been endorsed by other countries and the Non-Aligned Movement. The Manila Declaration urged all concerned to resolve differences in the South China Sea by peaceful means and to refrain from taking actions that could de-stabilise the situation. Besides, countries were urged to undertake cooperative activities which increased trust and confidence and promoted stability in the region and encouraged all claimants and other countries in Southeast Asia to address the issue in various fora, including the Indonesian-sponsored Workshop Series on Managing Potential Conflicts in the South China Sea.

An ASEAN-China Working Group on the Code of Conduct met in Kuala Lumpur on 26 May 2000. The DOC preamble states that the purpose of the agreement is not to resolve the problem but to "enhance favourable conditions for a peaceful and durable solution of differences and disputes". The DOC was signed on 4 November 2002 during the Eighth ASEAN Summit in Phnom Penh, Cambodia. China described the DOC as a "symbol that would lead to new relations between China and ASEAN." The DOC was a political document and was a necessary step towards establishing and agreeing on a code of conduct (COC) in the SCS. The DOC aims to avoid military actions and promote confidence building measures in less sensitive fields and mutual understanding between ASEAN and China. Key principles mentioned by the DOC in the SCS are as follows: [46]

- Prohibition on the use of force and threat of force
- Exercise of self restraint
- Peaceful settlement on international disputes
- Search for and adoption of confidence building measures
- Cooperation
- Consultations
- Respect for the freedom of international air and maritime navigation

Subsequently there has been series of declaration between China and ASEAN with regard to the SCS as follows: [47]

- 2002 – China-ASEAN Declaration on the Conduct of Parties in the South China Sea
- 2002 – China-ASEAN Joint Declaration in the Field of Non-Traditional Security Issues
- 2003 – China became the first dialogue partner to accede to the Treaty of Amity and Cooperation
- 2003 – ASEAN-China Joint Declaration on Strategic Partnership for Peace & Prosperity

The 1992 ASEAN Declaration, the ASEAN-China Declaration on the Conduct of Parties (DOC) and the South China Sea Informal Working Group has not been able to manage conflict in the SCS. The first mention of a potential code of conduct, the ASEAN Declaration on the South China Sea was in 1992, almost 20 years ago. Though progress was slow, China and ASEAN countries agreed to a preliminary set of guidelines in South China Sea disputes through the ASEAN Regional Forum at the Senior Official's Meeting of ASEAN countries in Indonesia in July 2011. The guidelines are on the implementation on the DOC in the SCS and are a step towards making the informal 2002 declaration more conclusive. The agreement is aimed at governing proposed negotiations on a binding code of conduct for disputed territories in the SCS. The significant part of the document is the suggestion that the parties will work toward a legally binding code of conduct. The documents promote a reinvigoration of efforts to reach a solution to disputes, and notes that progress will be reported on an annual basis to an ASEAN-China ministerial meeting. The guidelines provide no deadline or timeline for agreement on a code of conduct nor does it address operations, i.e., conduct, of any sort or direction of a code. The only reference to "code of conduct" is a brief expression of interest which states that China prefers to negotiate on a bilateral rather than multilateral basis; a factor that is reaffirmed by the guidelines, which state that disputes will be handled bilaterally between states. But this may also complicate and hinder negotiations for a code of conduct.

ASEAN Legal Experts Meeting

In September 2011, ASEAN convened a meeting in Manila among the maritime experts of its 10-member states [48]. The meeting discussed a Philippines Plan for settling the long-standing disputes over the SCS. The Philippines presented a plan of a unified regional policy in confronting China through forging a common stand among the claimants. The Philippines proposal urged claimants to explore the possibility of delineating the disputed areas for joint projects. The proposal also includes delineating the disputed islands so claimants can demilitarize them and turn them into a "zone of peace, freedom, friendship and cooperation". China protested the meeting because she

prefers bilateral negotiations [49] with each claimant state and questioned ASEAN's efforts to deal with the SCS as a group when the majority of ASEAN members, except for Vietnam, the Philippines, Malaysia and Brunei, are not claimants.

OPTIONS TO MANAGE SOUTH CHINA SEA DISPUTES

In view of the escalating tensions in the SCS, ASEAN has to play a stronger role at promoting preventive diplomacy to avoid and mange disputes. Key ASEAN states have to step up and engage the powers (in this regard, China) collectively and ASEAN centrality is crucial in creating balance without creating a new power structure in the Asia Pacific region. The US finds ASEAN as the most logical, neutral forum for regional diplomacy [50]. In this regard, approaches by individual ASEAN member states, in particular seeking US involvement in SCS disputes, is not the way forward as among the fundamental principles of ASEAN is the "settlement of differences or disputes in a peaceful manner", and "effective cooperation among themselves".

However, in reality ASEAN has not been able to conclude a common agreement among member states on prevention of incidents at sea. Initiatives under the ASEAN umbrella is not supported with preventive diplomacy machinery such as an active early warning mechanism at inter- and intra-state levels, facilities for providing "good office", the ability to marshal confidence-building measures and the lack of ability to contribute towards preventive deployment at ASEAN level. Those initiatives remain at the theoretical and dialogue levels but are unable to be put in practice. The ARF managed to convene meetings and dialogues among Senior Official's Meeting leaders that transmitted into statements and affirmation by leaders but preventive diplomacy has not been forged into a definitive policy.

Nevertheless, a series of preventive diplomacy activity has taken place in the region such as the work of the Geneva-based Henry Dunant Centre for Humanitarian Dialogue in facilitating the peace process in Aceh, Indonesia, Thailand's role as dialogue co-ordinator on peace talks between the ethnic minorities in Myanmar and the regime in Rangoon, Thai Armed Forces role in peace keeping in East Timor, and the work of Indonesia and Malaysia in the peace process between Moro separatists and the Philippines government. But the above initiatives are not under ASEAN auspices but by individual Southeast Asia governments and international and inter-governmental organizations. In view of the number of maritime border claims, ASEAN needs to use existing platforms such as the ASEAN Defense Ministers Meeting (ADMM), ARF, and the ASEAN Maritime Forum to forge greater preventive diplomacy measures in managing SCS disputes. To this end, there are four mechanisms that can be considered in the context of PD in the SCS.

Increasing Confidence Building Measures Among Navies Operating in the South China Sea

Amid concerns that tension among the claimants remained a threat to regional peace the Chinese position with regard to her rights in the area has not changed. What is needed in the Spratly Islands is Confidence Building Measures (CBM) among the navies of the claimants. CBMs are meant to give the navies confidence that the other(s) is not preparing military action and provide a way to avoid misunderstandings that might result in violent confrontation. Thus, claimants should pursue approaches that will build upon CBMs among the navies specifically between the navies of China, Vietnam, and the Philippines. This may create an avenue for the prevention of incidents at sea involving naval ships operating in disputed SCS areas. Concluding an INCSEA Agreement to maintain good order among the navies operating in the region is the best option for conflict escalation.

Since China is willing to engage in bilateral compared to multilateral negotiations in regard to territorial disputes, it may be prudent for SEA member states especially Malaysia to facilitate the concluding of INCSEA Agreements between China and the Philippines and China and Vietnam. The objective would be for claimant states to set out certain standard operating procedures (SOP) aimed at preventing accidents from occurring between naval forces and prohibit proactive or dangerous behaviours- between naval ships, law enforcement vessels, fishing trawlers and explorations ships in the disputes waters. This may include the development of communication hotlines between senior military leaders and advance notification of certain military/exploration activities. Malaysia may promote her experience in concluding the MALINDO-INSCEA Agreement between the Malaysian and the Indonesia navies during the Sipadan- Ligitan dispute as an example to avoid clashes at sea. China's strategic analyst had suggested (in an editorial published in the Chinese-language edition of the Global Times) [51] that the Beijing government declare war on Vietnam and the Philippines, the "two noisiest" countries that have been proactive in defending their claims. This comes as a warning for the need for CBM and to ensure that China, Vietnam, and the Philippines do not spiral into naval confrontation in the SCS. While negotiation, mediation and arbitration would work in the long run, the best short term resolution to territorial disputes in the SCS would be via enhancing CBMs.

Enhancing the Role of Diplomatic Good Office

The role of the diplomatic good office (DGO) is an option that could work well in the context of South China Sea disputes. That the Asia Pacific Region has been peaceful and stable for more than two decades, open clashes in the SCS between the big powers such as China and the US have not materialized, and claimants have been able preserve peace is partly due to the efforts of the DGO. The SCS disputes have not only not escalated into serious military clashes in the past; it has, in fact, been mitigated, and a more stable peace has developed. DGO activities include the South China Sea informal workshops,

personal networking among leaders, and Track-2 diplomacy. For example the government of Indonesia with the aid of the Canadian government has taken on the role of facilitator to provide the DGO in organizing the South China Sea Informal Working Group workshops. These workshops have been promoting cooperation, confidence building, and trust among the conflicting parties. Lacking are the interactions and Track-2 initiatives which unfortunately have not morphed into a definitive policy framework. They have merely been discussions, adoptions of statement and reiterations of commitments. This is attributed to the fact that the role of the DGO is informal, and disputing countries are not willing to discuss their territorial issues in formal and affirmative means thus preventing final resolution. Moreover DGO efforts to date involve somewhat easy tasks such as the intra-state conflict between the Philippines government and the Moro National Liberation Front and facilitated by the Indonesian diplomat Dino Patti Djalal. In the SCS, inter-state disputes are the norm and involve multilateral diplomacy. For this the role of the DGO may only work by the appointment/selection of senior diplomats or regional leaders who are able to conduct negotiations and mediation at the inter-state level. The appointment of the leaders should preferably be at least at the Asia Pacific level and not limited to ASEAN candidates. The setting up of the DGO for the SCS should be in cooperation with the United Nations that may help in establishing risk reduction centres within the region, an inventory of SCS disputes, and to assist in fact-finding and monitoring of potential conflicts in the area. In such instances, the suggestion by Smith [52] to invite an outside entity which could offer nonbinding advice and recommendation on how to allocate the area to the respective claimants or to create joint development could be implemented under the auspices of the DGO.

Early Warning of Conflict Situations

Promoting early warnings of situations is a functional mechanism involves collection and utilization of information with regard to potential political, economic or social developments in the SCS. This option was supported by Mark Valencia who described that the claimants could implement an early warning system "based on existing mechanisms to prevent occurrence/escalation of conflicts" [53]. Fact findings and information on the movement of troops, naval activities of both claimants and non claimants, and procurement of arms among the claimants, are indeed necessary to early incident warning systems. Besides, economic-related activities such as exploration of resources and fishing by parties involved are necessary to provide systematic management of conflict. The key factor in early warning is timing; in the event of an emerging dispute, an observer mission may comprise senior diplomats, military personnel, civilians with specialized knowledge or representatives from academic and research institutions. An early warning example included information on India being pulled into a complex territorial dispute in the South China Sea. This came about with China warning the Indian state oil company that its joint exploration plans with Vietnam amount to a violation of Chinese sovereignty. India's Ministry of External Affairs [54] however said that the block is well within the territory of Vietnam and India would proceed with the drilling in early 2012. Analysts say that a fresh standoff between China and India may flare up in the South China Sea. Other examples include the action by the

Department of Energy in Manila taking bids for 15 new offshore explorations blocks near Palawan in the proximity of the Spratlys [55]. There is a need to establish an agency to make fact-finding and analysis of conflicts in a timely manner for early warnings of conflict and confrontation. The agency should consist of impartial personnel; perhaps the ARF could deliberate on the countries that may be suitable for this role to ensure information is kept secure and used appropriately. For a start, Singapore, Indonesia and Australia may take the role in promoting early warning under a specialised agency or research office such as the Office of Research and Collecting Information of the United Nations [56].

Preventive Deployment

Preventive deployment may be an option that can be excluded in the near term since it is military in nature and requires a credible military presence. It may not be needed at this stage Since there are major powers involvement in the SCS such as the US, Japan, and India, hence seeking any kind of military-related solutions in the SCS may be objected to by even the smaller nations in SEA which, prompted by their fear of super power rivalry.

ASEAN to Reinforce the Concept of Zone of Peace, Freedom and Neutrality (ZOPFAN).

The declaration of ZOPFAN in 1971 was result of fear among the smaller countries in Southeast Asia on the super power rivalry. ZOPFAN is relevant to today's strategic landscape in the SCS The rise of China and India and the U.S interest to secure the freedom of navigation. Nonetheless, ASEAN nation has to build upon regional dialogue to envisage the regions nations' interest to realize ZOPFAN.

The 1959 Antarctic Treaty

There are also suggestions that the 1959 Antarctic Treaty may be a model for the dispute settlement in the South China Sea. The Antarctic Treaty "froze" the claims of the seven claimants states – Argentine, Australia, Chile, France, New Zealand, Norway and United Kingdom and agreed that Antarctic should be used for peaceful purpose only- permits state parties to conduct scientific research in Antarctica. For example, Robert Beckman suggested that a similar agreement could be concluded as the basis for cooperative arrangement in the South China Sea [57].

CONCLUSION

Disputes in the South China Sea have been a source of conflict for the past 30 years among the claimants namely Brunei, China, Malaysia, the Philippines, Taiwan, and Vietnam. The rapid development of China and the effort of the People's Liberation Army to modernize its equipment had drawn a great deal of concern in the region. China has

been increasingly assertive on the international stage and has used her growing economic and military strength to support its regional and international policies, for example, in the South China Sea. The Philippines and Vietnam have sought US intervention in the South China Sea in response to China's behaviour towards them. This may complicate existing territorial claims and the interaction between the claimants in managing their disputes. As such there is a need to revisit the existing PD mechanism in place and to consider a more workable PD such the CBM, diplomatic good office and early warnings as a way forward to manage or at least minimize tensions in the SCS.

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SYMBIOSIS OF CIVIL-MILITARY RELATIONS IN DETERMINING SECURITY AND ECONOMIC COHESION OF PEOPLE'S REPUBLIC OF CHINA

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ABSTRACT

The symbiosis civil-military relations implemented and continued by Peoples Republic of China (PRC) Presidential on the Peoples Liberation Army (PLA) moved PRC in 2010 as a second largest dominated economic power after the U.S. The rise was influenced by a stable environment provided by the PLA and the Chinese Communist Party (CCP). PLA's role and responsibilities to ensure PRC's economic security dynamic building-up and at the same time to maintain the political security as part of symbiosis condition of civil-military relations have been significant. This paper intends to examine various conceptual and model of PLA civil-military relations that were adopted and executed by PRC's presidential which provided the security stability to promulgate its modernisation program and to achieve its economic endeavours.

Keywords: Symbiosis, economic stability, internal security, foreign policy, leadership

INTRODUCTION

The role of People Liberation Army (PLA) in the non-military fields particularly in economic sphere is frequently discussed at present especially in the context of People's Republic of China (PRC) as an emerging power in the Asian region. The main role of the PLA is to maintain the security order of PRC. Part and parcel of its responsibilities is to provide a security space and condition to ensure the economic security matter as a whole can be achieved smoothly. Based on this statement, the aim of this paper is to postulate to what extent the role and responsibilities of the PLA to ensure PRC's economic security dynamic building-up and at the same time to maintain the political security as part of symbiosis condition of civil-military relations. The most important part is to prove the significant impacts and implications of the PLA's roles towards the PRC security and economic sustenance in contributing and formatting of PRC's national resilience policy as well as PRC modernization. The significances of the PRC's civil-military relations

framework will provide some implications to the directions of the PRC's foreign policy in terms of economic security in this region, particularly the Southeast Asia region.

The orientation of this paper will focus on the civil-military relations dealing with security and economic preponderance of the PRC since 1949, till present by examining various conceptual and model of civil-military relations that were adopted and executed by PRC's presidential. A bulk of research and writing on the significant roles of the PLA, have been done by academician and non-academician from various fields and disciplines. Consideration and special research by the certain bodies are assumed important since the PLA is the main contributor in the formation of the PRC domestic and foreign policies in dealing with the security policy, defence policy and economic policy. In a long period, those policies are not only encompassing mainland PRC, but also provide implications and challenges towards the region. One of the agencies from the United States (U.S.) that is General Accounting Official (GAO) had conducted a research in order to get the information to what extent the role of the PLA in improving the economic dynamism and security of the PRC [1]. Based on the research, the foreign policy of the U.S. postulated a slight changed; therefore it is a need to emphasize the direct context to the PLA in order to understand the whole aspiration of the PRC. The statement is in line with the perspective of Srikanth Kondapalli when he emphasized that;

> `the wider role of the PLA in the decision-making process of the PRC's economic relations, political relations in terms of stability of the leadership, allocation of power, and other issues needs to be pointed out'* [2].

SOME CONCEPTUAL ASPECTS IN CIVIL-MILITARY RELATIONS OF PRC EXPERIENCES

The scope of research and discussion of this paper encompass such numbers of conceptual theoretical framework which have been initiated and proposed by various scholars in the field of civil-military relations. The aim is to emphasize the relationship between military and society and how the PLA managed to win the support from society in order to strengthen its domination. Several theories will be highlighted in order to discuss the relationship between those elements, and how the situation in the PRC differs compared to other nations. On the methodological aspects, the approach of this paper is the classical and qualitative manners, which will include the adaptation some of the relevant concepts in order to understand the social phenomenon between the PLA and the society and the impact of the relation towards the security and economic of the PRC, the data instruments, the historical facts analysis and contemporary resources.

Political turmoil in PRC is very much focused in the arena of civil - military relations at the early stage of the PRC's establishment. The relationship between these two elements, as termed by Jeremy T. Paltiel, revolves around a unique trend or series between military leadership and politic under the Chinese Communist Party (CCP) [3]. In defining the concept and the behavioural relationship between these two elements,

Paltiel highlighted and analysed views from other writers such as Stuart R. Schram, Amos Perlmutter, William M. Leogrande and Samuel Huntington [3]. The '*symbiosis* [4] concept was promoted by Stuart R. Schram, while the '*dual-role elite*' [3] the '*party in uniform*' [3] was proposed by Amos Perlmutter and William M. Leogrande. These concepts were proposed as an attempt to explain the structure of relationship between the civilian and the military in view of the pattern in relationship between these two elements (leadership of the Long March generation).

Paltiel also stressed that the concept of '*civil*' itself as limited as in the case of the relationship among the components of the bureaucratic system in CCP [3]. Analysis of civil – military relations in PRC must therefore define the scope of 'civil' in relations to the CCP. The army or better known as the PLA in the context and concepts aforementioned is not exempted from the component which make up the government of PRC under the control of a party which CCP plays a very important role in the determining the governmental system and policies stipulated by the central government to be distributed to the ministerial levels and the regional governments (government or local bodies). The analysis and comparison as categorised by Paltiel notes that the involvement of PLA and the civilian encompasses its stand in the political system of PRC as a whole [3]. Based on the views, it is of no surprise that other authors like Eric A. Nordlinger [5], Samuel P. Huntington, Morris Janowitz [6] and Paltiel were of the view that the civil – military relationship pattern or its changes will determine the government system, socio-politic, socio-economic and policies promulgated by PRC in its entirety.

In order to prove the above conceptual frameworks, the civil-military relations pattern will be dealt further by discussing the PRC experiences since the era of the Long March generation until the present. It will also encompass its effect on PLA's integrity in assisting PRC and its contribution towards the strengthening of security matters and modernisation of PRC's economy. Throughout the history of PLA and PRC relations, the most crucial period were during the shifting period of Mao's and Deng's leadership, and it became more ambiguous when the PLA was related to the 4th of June 1989 Incident. Since then the question lies whether the PLA is still given the mandate as the main actor in safeguarding the security of civil population and also the promotion of PRC economic dynamism. The discussion of conceptual civil-military relations also involves a dilemma in terms of interaction between PLA and the CCP in the context of `*professionalisation and politicisation*' and also `*specialisation and generalisation*'. These dilemma and problematic dictums will be discussed later in the paper.

CIVIL - MILITARY RELATIONS PARADOX OF MAO'S AND DENG'S LEADERSHIP

The study of the contributions of the PLA to the PRC's political directions and economic dynamism, have their own uniqueness if it is compared with other military organisation from other countries around the globe. This condition happened since

the early stage of the establishment of the Red Army; the military and amateur leaders had led the organisation, which came from various backgrounds in early 1920s. The foundation responsibilities caused PLA to be burdened with multi-roles, military and civilian duties. In a long run and on an overall perspective, the significances of the elements of the PRC's civilian institutions are still under control of the PLA, since this organisation has been given the mandate by the CCP. Based on the execution-governing model [7] that has been applied by PRC, security matters as well as economic sector could not be separated in achieving surplus value to promote a developed and prosperity nation that profess communism ideology. On that sense, the absolute power and authority body that is PLA has to endure the stodgy responsibility by integrating the development and achievement of the PRC's security as well economic matters. In this context, PLA is the backbone in maintaining the economic dynamism and the security matter of the PRC from the beginning of 1920's until contemporary period. Thus it could be argued that the failure in PLA institution could create instability towards PRC's security and economy rather than external threats.

As stated in the earlier discussion, PLA's stand and its relationship can be deemed as unique and unlike other countries where it can be categorised as a '*symbiosis*' or '*the Party in unifor*m' during Mao Zedong's era [3]. Paltiel illustrates the situation where Mao Zedong's power was described as follows:

> '*Discussion of civil-military relations in contemporary PRC always starts from Mao Zedong's dictum: "Political power grows out of the barrel of a gun." The corollary premise of that formula – "Our principle is that the Party commands the gun and the gun must never be allowed to command the Party – bags the question of the scope and definition of Party control, the categorical aspect of civil-military relations in PRC...Consequently, "military elites are also party elites; they are dual role elites. Therefore to analyse 'party-military relations' in dichotomous terms is misleading.*' [3].

The civil-military relation scene provides an indication on Mao Zedong's era for the study of the development in socio-economy, socio politic, and government policies. These two elements are inseparable albeit from a different scopes. Paltiel's view has grounds in comparison to views highlighted by Eric A. Nordlinger in "*Soldiers in Politics – Military Coups and Governments*" where, in order to better understand the political system in PRC, he proposed a government model called "*Penetration Model*". The gist of the model is based on the integration of ideology of the civil and military. Leaders like Mao Zedong are very concerned and have always emphasise on the integration of ideology of the two aspects of civil and military as proven in the Chinese leaders call for "*Communist and Specialised*" in the military [5].

The penetration model practiced under Mao's rule, as described by the Defence Minister, Marshall PengTehuai in 1956, is a '*political work*' to encompass practically the entire spectrum of what is normally meant by military concerns, including military organisation, the assignment, transfer, and promotion of personnel, logistics, and battle

plans, as well as the implementation of all directives and orders issued by superior officers [5]. The control of the Party over the military through the above mentioned model is enhanced through the single political party control, which can be deemed as a success in PRC compared to other countries. Further on the pattern of control, according to Nordlinger, the military service is limited to political party members only, and before admission they must serve in the National Youth League Party (NYLP). A political officer is placed in each and every unit and the company commander chairs the party committee whose members are elected by the ordinary soldiers. Hence the political assimilation and adoption makes the military as recognised official body in the sole ruling party [5].

As the only controlling party over the military regime, the potential for the military to attempt a coup is very limited. The organisation was formed to affect an overall control over any political disturbances (See Figure 1 of PLA and CCP during Mao's era). Nevertheless, at a closer inspection, underneath the party's control over the army, which is done through '*bilateral cross-checking*', had in a way makes the party dependent upon the army as the backbone in order to stabilise PRC's internal politics. This is because the military's structural development itself is complicated and reciprocity in political matters. This situation, according to Nordlinger, is based on the penetration model where if the
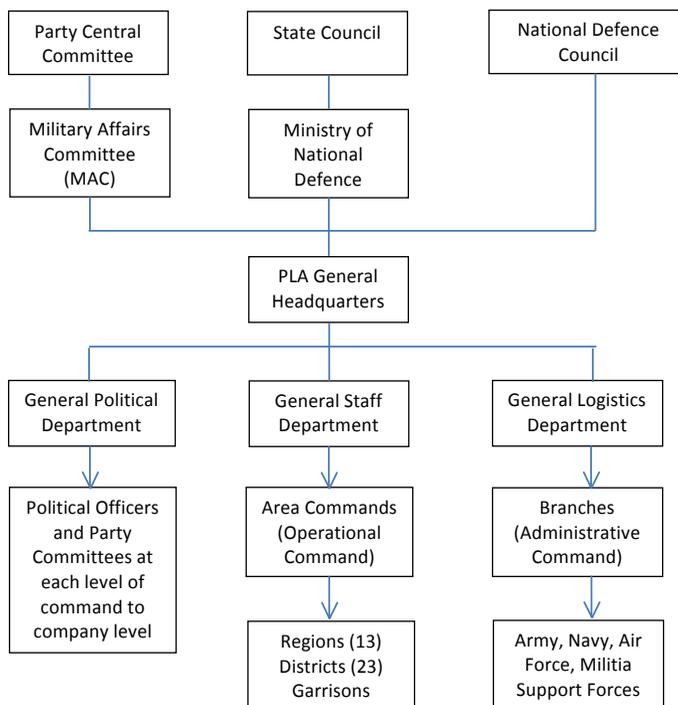
Figure 1: PLA's Organisation

Sources:
State Statistical Bureau (SSB), ZhongguoTongjiNianjian (TJNJ) (Chinese Statistical Yearbook), 1q993 (Beijing: ZhongguoTongjiChubanshe, 1993).

civilian were to maintain power through the penetration model, high ranking military officers would be involved in the making of vital policies. On the other hand, even though the penetration model places the civilian in among the highest appointment, the high ranking military officers normally possess wide jurisdiction in a decision making process that concerns military or vice versa [5]. This condition can be seen in the case of the Military Affairs Committee (MAC) where Mao Zedong himself chairs the committee [8] while its members include Marshall Peng Teh-huai who at the same time was holding two important portfolios, which were the Defence Minister and the PLA Commander.

On the other hand, the Nordlinger discussion is in line with Samuel P. Huntington ideas. Huntington's concept emphasized the `equilibrium of objective civilian control' in the context of `pro-military ideology', which could also has relevancy related to the civil-military relation model in PRC. He emphasised that:

> *`Pro-military ideology, high military political power, and high military professionalism. A society with continuing security threats and an ideology sympathetic to military values may permit a high level of military political power and yet still maintain military professionalism and objective civilian control'* [9].

Having understood the situation of the civil-military relation based on the various concept and models mentioned above, we need to go deeper into the PLA model, which was the brainchild of Mao Zedong under the CCP's organization. A question arises of whether it is in accordance to the statement made by Perlmutter and Leogrande'*the Party in Uniforms*.'PLA, which was formed on 1 August 1927 known as the Red Army and later became PLA after 1949, played a major role in advancing the development of CCP and control the Chinese mainland under Mao's leadership [10]. Mao's model is based on the 8 essential elements [10], which at the same time fulfil what Perlmutter calls 'the Party Uniform':

a. The military is an instrument of means in order to achieve a political objective.

b. The importance of relationship in order to correct the political view where sophisticated technology is only a means of upgrading military might.

c. Close rapport between the military and the masses.

d. One of the strategies in 'the people's war'.

e. High level of democracy in the military.

f. The military should be responsible on the economic function.

g. The military as a model to the society.

h. To alleviate the relation gap between the military leadership and civil.

Based on the elements mentioned above, at a glance it portrays a harmonious relationship (symbiosis) between the military and civilian (the party and people). Nevertheless, there exist a disturbance as analysed by Huntington based on the military-civil relations model, which revolves around the military professional context and civil control [3]. However, this paper will not dwell further on the dilemma based on the model highlighted by Huntington, but it will be based on the concepts and methodology mentioned earlier where PLA plays an important role in the move towards PRC's more dynamic security and economic policy since Mao's era due to a connotation saying that `PRC's policies since 1949 have been conditioned by military and political realities' [11].

PLA's activities in the field of economic under the scope of civil-military relationship above is not new in the history of PRC, and according to the principle of penetration model, PLA was allowed to participate in the production of goods and services, cater to the needs of the civilian sector of the economy as well as defence industries [2]. After the 1949 revolution, Mao started his campaign to uphold the masses' support for the CCP and PRC'. Changes and new development in the economic sector, which were given a stronger emphasis, encompasses the agriculture, industrial and handicraft sectors. Changes in the economic sector were given the right of way by Mao with the support from the PLA through two continuous stages; first was to control the inflation, which was still affecting the PRC towards 1940s as a result of World War II, and secondly to redevelop the infrastructure and production. A drastic change was made in what was understood as '*agrarian revolution*' [10] as a component under the '*Cultural Revolution*'. The peasants plight happened to be the main problem was the caused that lead to the Chinese Revolution 1949 and the peasants who made up of 80% of the Chinese population rallied behind Mao Zedong in his struggle [10].

During Mao's rule, any policy involving PRC's both domestic and foreign affairs are in reality determined by the military's role and politic [12] in the Great Leap Forward era. Several policies on renewing ownership and economic activities were implemented throughout Mao's ruling years. Starting in 1951 the first stage of transformation began with the establishment of Mutual Aid Teams (MATs) [12] where it changed agricultural technology for the purpose of improving farming productivity. The second stage was the development of 'Agricultural Producers Corporative' (APC) [10] where all assets involved in agricultural production were centralised and a bigger number of family were involved. However, most scholars like Dreyer and Feng-hwa Mah stressed that all these changes failed to increase production per capita because certain factors such as limited market and the unsystematic use of land and labour force, [10] in other words, the Chinese were practicing socialist economy/closed economic system as opposed to the traditional Chinese community and commodity market practiced presently.

The second sector given emphasis during Mao's era was the modernisation of industrialisation. Dreyer connects industrial modernisation with industrial policies that were related to the ones in favour of changes or agricultural revolution and entry into heavy industry of the mechanical type, which requires many experts labour. Modernisation in the industrial sector during Mao's era can be taken as the initial steps

toward an economic development, which was planned centrally. Nevertheless this era saw the society in total misery [10]. The extraordinary concentration given by PLA on economy came about in 1975, which was the transitional era between the leadership of Mao Zedong and Deng Xiaoping. Before we go deeper into the role played by PLA in the economy after 1980, it is essential that we first examine the changes and internal political tribulation, which involved the transition of the party leadership from Mao Zedong to Deng Xiaoping and its effects on policies and PRC's economy as a whole. PRC's socio-economic effected left by Mao and 'the Gang of Four' was portrayed as static and in a critical condition under the egalitarian system, which according to Dreyer, due to the practice of `corruption' which was rampant. In December 1978, in conjunction with the 'Third Plenum of the CCP's Eleventh Central Committee,' Deng Xiaoping made a big move to modernize and develop PRC's economy with more emphasis on the development of planning and the management of four main sectors namely industrial, agricultural, science, technology and national defence. The modernisation in the agricultural sector was given top priority followed by industrial, science and technology, and defence sectors [10]. Since 1980 (even the economic changes initially has begun in 1978) when Deng Xiaoping empowered, he reorganized the structure of the PLA towards achieving more credible and professional institution, which became the backbone of CCP in supporting the steady spreading and communist ideology across the PRC.

Along with the reformation in the economic sector as mentioned above, Deng also made a number of changes in PLA's organisation which involves the running of the Central Party. The reorganisation process aims to gear up the PLA for future warfare in which joint coordinated operations would play an important role to carry out a credible security role [2]. Like Mao Zedong, Deng also believes that PLA is such reorganisation still compound to that;

> `This essence is the Party's army, the people's army, the army of the socialist state... Our army will in the final analysis be loyal to the Party, loyal to the people, loyal to the state and loyal to socialism'*. [3]

PLA's role was a bit reduced by Deng Xiaoping where PLA needs to concentrate on its professional and specialisation functions. As an example the railway administration and service, which were handled totally by the PLA during Mao's era, was transferred to be under the responsibility of the Railway Ministry and the urban and infrastructure construction tasks were opened to the public. [11]. Though changes were sweeping, it was not felt as much because the high-ranking PLA officers were still influential in the creation of any PRC's new policies because they make up one third of Central Military Commission's (CMC) membership. Therefore, PLA still maintains its position as the prime mover in the development and modernisation of PRC. The significance of PLA's role in the building of a more dynamic PRC's economy was reiterated by Dreyer and in short he argued;

> `*Despite the re-emphasis on the PLA's functional role under Deng, the military retains an important societal role as well. The PLA is expected also to be heavily involved in PRC's economy'.*

The involvement of military institution in fulfilling civil needs also encompassing external economic policies by promoting the economy in the 'Special Economic Zones' through producing goods for the domestic consumption and export while at the same time provides specialist training to its members in those particular fields. PLA's involvement in the general economy was in tandem with the double-pronged PRC's policy for integrating the civil and military for the purpose of development of national defence and economy as a whole while harnessing the military technology for the purpose of peace and prosperity for the people.

THE LEGACY OF MAO'S AND DENG'S CIVIL-MILITARY RELATIONS AFTERMATH

In the 1990s PRC had given an avenue for the PLA when President Jiang Zemin gave approval for the PLA to double its effort in economy on a wider scale. The consent was given by Jiang (as the chairman of CMC) during a CMC meeting in January 1993. This situation, as described by Willy Wo-Lap Lam, makes PLA as the guarantor for the economic development and security umbrella; `*The people's army will resolutely from beginning to the end will support and take part in and safeguard reform and the open door'* [13]. In this civil-military relations, PLA still has been given the wider decision-making processes of the PRC includes the question of guaranteeing the stability of the regime under Jiang Zemin, and the economy, foreign policy issues etc. On May 31, 1995, the CMC promulgated a revised version of the `Rules and Regulations for Political Work of the PLA'. It again stipulated, among other things, the basic tasks of the PLA was to serve the country in reform, opening up to the outside world and socialist modernisation, to serve the building of a revolutionary, modern and regular army, and to guarantee politically, ideologically and organisationally legitimacy [2]. It means that the role of the PLA in decision-making process of the PRC seems to be increasing with regard to its domestic and external policies. Until the present moment, the nature stand civil-military relations in PRC are showing the *status quo* of Mao's and Deng's legacy even though some indications noted by David Shambaugh that the pattern moved from in a linear evolution from *symbiosis* (pre-1989) to control (post-1989) to *relative autonomy* (post-1997) [12]. The status quo is strengthened in the immediate aftermath of Tiananmen incident, which the CCP made great efforts to put control over the PLA. It is due to the smooth shifting and protracted leadership succession from Deng to Jiang Zemin. According to Kiselycznyk and Saunders:

> `*The literature on the military role in elite politics offers the clearest and ultimately least accurate predictions. First, most analysts expressed serious doubts about Jiang Zemin's prospects for political survival, let alone strong leadership. Second,*

the overriding expectation was that the PLA would play a major role in the process, possibly even serving as "kingmaker" [14].

A little bit change succeeded by Jiang's leadership to put PLA in a condition of a *relatively autonomy* by the end of 1990s. Jiang announced the PLA divestiture in 1998 after Party leaders bargained with the PLA leadership. A symbiotic agreement seems to be existed between Party and military even though some challenges went along the line. The point of agreement includes an active role in economic involvement of PLA i.e. to increase yearly budgets in order to compensate for the values lost enterprises and promised to increase yearly budgets to make up for lost PLA commercial revenue [14]. Due to strong leadership and influenced of PLA in civil-military relations contrarily, the basic agreement which is agreed, does not going in the line perpetually due to a tension relation among both civilian and military leaders. In facts, the Mao's model of penetration in civil affairs is still under the dominion of PLA.

It has caused a continuously PLA dominant in security and economic policies presently, particularly when PRC dealt with the most significant foreign issues related to the issue of liberation of Taiwan, and potential military conflict with the U.S. on the horizon [14]. The economic roles which was carried by the PLA, backdated to the mid-1980s, as coined by Wily Wo-Lap Lam; '*the army going into the corporate world*' [13] where the commercialisation of PLA's resources were given approval by the highest commander of the organisation concern. In the middle of 1993, it was estimated that 70 % of general goods were manufactured by the military's industrial complexes, made up of more than 50,000 factories, and US$ 1 billion in foreign investment. Between 1991 and 1995, the central government had allocated a loan of more than six billion yuan to some 400 giant development projects handled by military units [13]. Giant companies such as Polytechnologies, Norinco and Xinxing, which are PLA controlled, played a vital role as seen in the case of Xinxing Corp where in the late 1992 launched 17 projects, which were joint-venture with western companies, worth amounting to US$ 60 million. The fields involved were in the manufacturing of steel and garments, property, cosmetic and services. Xinxing Corp also has 8 divisions operating in the offshore and more than 100 subsidiaries employing 100,000 people [13]. In the early 1993, PLA contributed investment capital in Hong Kong and worked together with giant multinational companies. As an example, 999 Enterprise Grouping, which has fixed assets of 1.6 billion Yuan, invested in Germany, US and Russia [13] PLA also had a joint-effort with multinational companies such as AT&T, MOTOROLA, and Unisay. It's involvement in the manufacturing and export activities included Chinese medicine and owned 10 prominent textile companies in PRC [15]. Having these kinds of economic activities and achievements, it is so `heavy-hearted' for PLA to release its commitment to civilian side.

During the 16th Party Congress in 2002 was the first leadership transition between two groups of post-revolutionary leaders. Due to Hu's weak military ties, there were predictions that PLA and the influencing leadership of Jiang Zemin remained playing the active role [14] in determining PRC's security and economic policies. In short, PLA was playing an important determining factor in every leadership transition period in order

and be a partaken of symbiosis civil-military relations in PRC. In fact, the prediction came true even though Jiang handovers the presidential post, but he still retain the chairmanship of CMC, an organisation whom dominating overall policies and internal affairs of civil-military relations until 2004 [14]. The transition period would be as a part of Hu's preparation to gain support from military side based on Deng's and Jiang's role model by consider the PLA's ability to affect the overall political climate in PRC. In short, according to Kiselycznyk and Saunders;

> `*it would also support contemporary models that assume the PLA has a latent power that, although rarely used, could prove decisive in a future and more intense political crisis'* [14].

Another point should be understood on smooth power-shifting from Jiang's to Hu's leadership was that a strong foundation been established by Mao Tse Tung. Traditionally, both the CCP and PLA shared a symbiotic relationship. The PLA from the beginning is an instrument of the CCP, not the Chinese state. In this context, military elites are generally also party elites, and indirectly has influential element to control over PRC. The CCP determines the shape of the military even as the military helps to shape the party. In this case, PLA also is free to determine its demands of a technologically-advanced military, and at the same time political control has not prevented the PLA from forming a separate organisational identity within the boundary of symbiosis relations [16].

IMPACTS AND IMPLICATIONS OF MAO'S AND DENG'S LEGACIES IN EXTERNAL SECURITY AND ECONOMIC POLICIES

Mao's and Deng's legacies in civil-military relations' model and concept have caused huge impacts and implications which were not only encompass the domestic security and economic affairs of PRC, but also externally.

The Economic Development and the Modernisation of the Defence Industry

Even though Deng made changes in PLA on the aspects of doctrine and new thinking on PLA's defence concept and function to become more specialised and professional [17] any changes in economic development and open door policy or open economy were considered as encroachment into the dimensions of strategy and national defence doctrine. Therefore, PLA's involvement was unavoidable especially in the running of domestic and foreign matters which peculiarly related to defence industry. Within this context, the defence industry becomes the pioneer for the other civil industries:

> `*PRC's defence industries began significant reforms in the late 1970s that are continuing into the 1990s. The reforms have required and enabled the defense industries to play a leading role in the implementation of PRC's broader economic policies, including the restructuring of industry and the expansion of local government and enterprise decision making power'* [18].

As the pioneer, the defence industry later played a vital role in transferring the technology to the manufacturing of general goods for civilians' usage. Along with the manufacturing of general goods, the transfer of technology has become a main responsibility of the defence industry in the interest of internal security and doctrine incongruence with defence and military strategy [18]. Within the same context, defence industry has become the backbone providing the impetus towards further development in PRC's economic growth and the modernisation of military. It was started seriously under the Deng's PLA modernisation plan when in September 1984, the Third Plenary Session of the 13th Central Committee of the CCP made a decision to reform the system of procuring armaments, which involved detailed plans to those military industrial departments undertaking the weapon-equipment Research and Development (R&D) tasks. The PLA experimented with this system in the research and manufacturing of 16 military projects [2], which covers the productions of infantry weapons, armour and artillery weapons and systems, aviation industry and naval equipment although in certain condition it faced some problems such as deficiency of technology up-gradation and dependable on the foreign expertise like from Russia.

Given the above development, certain institutions such as PLA's and PRC's leadership played a vital role in the creation of defence industrial policy, which was supported by the Chinese open economic system and the military's involvement. In national security matters, the PRC, through its foreign policy, emphasized on the upgrading of cooperation with foreign governments in the economic fields and play a more active role in the international politics. Policy on trade, in the foreign policy context, gave more emphasis on the expansion of export market and foreign technology, which were vital assets to the growth in civil and military sectors. In order to realise the policy, NORINCO for instance, which is the PRC's largest defence equipment producer (under PRC State Council and PLA supervision and coordination) was given a great intensity to procure the vision.

PLA's Leadership Factors in Economic Civil-Military Relations of PRC

`Any attempt to understand leadership trends and features in PRC must take into account the role of the Chinese military. This critical institution serves as the ultimate guarantor of social order and the defender of the communist regime. It has also served as the key arbiter of power among the top elite and as an influential player in the formulation of domestic and foreign policies' [19]. It is also argued that rapid economic growth and expanding resources to support military modernisation along with other government priorities have muted potential conflicts between civilian and military leaders [14]. These statements gave a broad implication in the discussion of PLA's role in PRC and hence exhibit four vital categories in its role in the security matters and economic modernisation context, which are:

a.   To improve and upgrade the defence sector's production facilities.

b.   To procure foreign weaponries.

c.   To upgrade national defence capability.

d.   To upgrade R&D and the military's engineering capability so as to develop modern armed forces comparable to the western nations [14].

According to Folta, the reason why the defence industry is given a mandate by PRC's top leadership to expand the country's dynamic economy is based on three main aspects:

a.   The drastic improvement in the defence industry's output for the consumption and transfer of modern technology to the civil sector.

b.   The defence industry as a national model of a large-scale industry.

c.   Complete integration of defence industry in the context of civil economy [18].

On the early discussion raised on PLA's involvement in the defence industry, it is because the organisation creates its own policies on economy and defence; `*The Deng's leadership has been keenly aware of the important role that military leaders have played in making political and economic as well as military policy. The terms 'military leaders' is limited to men in important military posts who either concurrently hold political positions such as the Minister of Defence or have strong political influence because of their military positions such as military regional commanders*' [18]. This fact can be seen in the organisations of higher institutions in PRC where the PLA is directly involved in expanding PRC's dynamic economy.

Based on the CCP Central Committee's organisational structure, Politburo Standing Committee and Party Secretariat are the highest institutions in the CCP in policy formulation on security and economy. The highest government organisation is the National Committee and Standing Committee of the National People's Congress (NPC). These party organisation and national body would decide on matters pertaining to national spending, defence, economic planning and have the authority to determine leadership reappointment and the structure in the matters of the economy, military and the defence industry institution. The leadership in these two main organisations cans only lasts as long as they get their support from the military. The CMC has a higher authority over military matters, which is the main connection to the CCP's Central Committee and the government body. Thus this linkage portrays CMC as the institution unifying all the policies created by the government and party. Under this organisation, CMC has a direct access to the military and at the same time monitor key departments under PLA's organisation. Together with National Committee, CMC shares authority in The Commission for Science, Technology and Industry for National Defence (CONSTIND) matters – which is the organisation's key to the defence industry bureaucracy. CMC usually consists of political leaders who also have a say in the formulation of policies on national defence and economy.

CONSTIND has an extensive influence over the defence industry's research and development and manufacturing. Its main responsibility includes the coordination of activities of other industries in the economic and military context with respect to defence industry. Apart from its responsibilities in the economy, CONSTIND also aids in the coordination of agencies and ministries in the production of goods for the civil and military consumption. In fact, the pioneering steps taken by the Defence Industry in the late 1980s became widespread until at the present, which effectuated each ministry was set up for the purpose of handling the corporations, R&D institutions, enterprise networks, local and overseas bodies [18]. Ministries such as Ministry for Metallurgical Industry and Ministry for Chemical Industry were put under the auspices of CONSTIND for the purpose of weapon production, raw material processing and research. Apart from the research institutions established under the auspices of these ministries, there were other research institutions established separately under CONSTIND for the purpose of high technology research for the civil and military consumption. All of PRC's defence industry, including the enterprises and research facilities along with other economic institution, were handled by PLA's subsidiary companies, which are directly run by PLA's General Logistics Department [18]. Another reason that leads to PLA having substantial influence in the formulation of economic policy under the security policy reason is because, the Ministry for National Defence, General Staff Department, General Logistics Department and General Political Department all having representative in the CMC and are influential in the administration of the defence industry [18].

PLA and Foreign Policy in the Context of PRC Foreign Trade Policy

PRC's foreign trade policy is closely linked to its foreign policy. These policies in turn are closely linked to Deng's political, social and economic policy in terms of national security. PRC's security policy outlined several objectives to be accomplished, they are:

a. Basic objective, priority is given to domestic changes.

b. Second objective, to defend national sovereignty and to uphold the 'super power' status.

These objectives influenced the formulation of PRC's policies on security and foreign affairs since in the early 1982, which outlined several doctrines that were widely implemented in 1988 [19] and prolonged contemporarily. These doctrines involve policies on foreign affairs and external trade, which are related to the policy on external trade within the context of the modernisation of PRC's economy and to strengthen its defence posture as a whole under the scope of comprehensive security; [20]

a. To maintain regional peace and to contribute towards global stability in order to ensure the revival of domestic economy and modernisation of defence.

b. Confidence in real diplomatic relationship, balance of power and the avoidance of the creation of entangling alliances.

c. To continue important funding at certain stages for the purpose of modernisation of the conventional army, the formation of a modern armed forces structure with an operational doctrine.

d. Capable of selling sophisticated equipment for military use: low-technology arms and arms-related equipments including big ticket for the transfer of nuclear technology.

e. To enhance cultural, economic and political ties with Taiwan.

f. Claim on Spratly Islands.

g. Capable of hampering a nuclearised Korea or the reconciliation of the Korean Peninsula thus enhancing the economic, politic and diplomatic ties with South Korea.

h. To enhance economic and diplomatic ties with central Asian (inner Asia) countries [19].

As a result, the doctrine of `*people war*' has been incorporated further up to encompass external trade policy in the context of activities such as import and export of raw materials, intermediate goods, technology, capital and marketing. Its shows that the investment activities through the reformation of foreign trade policy had indirectly link up PRC with other major powers and economic powers by opening PRC's economy with a capitalist model. This model of foreign trade also emphasises on the concept of the Greater PRC that includes the investment and trade arrangement between PRC, Hong Kong and Taiwan in the main industrial economic sector. The trade arrangement, be it through major players such as the U.S. and Japan, and the Greater PRC concept, is seen as under the control of the central government through the main institution, CONSTIND. The reason behind the central government which dominated by PLA's high ranking leaderships control over the investment and foreign trade is only because of impetus of national security priority and objective in mind. Main PRC regions running trade and investment activities are in Southern PRC (Special Economic Zone). In this situation, PLA's role in the context of foreign trade, as mentioned by Swaine:

`Throughout PRC, increasing numbers of military factories are converting to civilian production while numerous military units at all types are establishing profit-oriented enterprises, many in the foreign trade sector. The dynamic coastal regions in particular are increasingly serving as sites for such military enterprises'. [19].

The military may be construed as the central government's instrument or mechanism for the purpose of PRC's economic effort with military-led enterprises and expanded military involvement orientation in the privatisation of the economy especially in the foreign trade sector.

CONCLUSION

The results of the symbiosis civil-military relations, in 2010, has caused PRC moving up as second largest dominated economic power after the U.S. presently, due to a stable environment which mooted initially by both elements above;

With the 1.3 billion population and 200 ethnic tribes, PRC had done a very good job in sustaining the peace and stable nation that boost the economic itself with very solid GDP (2010 est.): USD 5.88 trillion (exchange rate-based); USD 10.09 trillion (purchasing power parity), with per capita GDP (2010): USD 7,600 (purchasing power parity). The GDP real growth rate (2010): 10.3% [21].

In short, these paradigm experienced is very rare for such nation that have been practising communism and socialist political system, but achieved an amazing emergence in economic capitalism and *laissez- faire* systems.

Combined effort of symbiotic relations among PLA and CCP in these periods of greater openness and globalised world has tended increment in rapidly economic realm, particularly in coastal region of PRC. Both elements managed to bond a special relationship in order to retain a stable nation without many problems. PLA in this context also is a supreme tool governs and to restore CCP policy's over the state. Any attempts or corrosive elements to weaken and do away with the CCP leadership and tries to disintegrate of PLA's commitment from them could be considered as the great enemy of party, state and military, even though the PLA is moving into an entirely new era of civil-military relations and corporate specialisation and professionalization [12]. This statement concluded that PLA's influence is still very much needed by the CCP in the formulation of any policies, including in economic-security sphere in next decades of 21st century. Thus, this paper concludes that the symbiosis between civil military relation existed between PLA and the CCP determines the security and economic cohesion of PRC.

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[7] Throughout the history after the formation of People Republic of China, Communist Party has establishing total control over the Chinese economy and society. At the early stages, PRC execution-governing model faced two major challenges: consolidating power and developing the economy, and at the time Soviet model was adopted by the Chinese leaders, which key features command economy include: (1) a single ruling-party dominated the state and other social organisations, (2) the state and collectives controlled the allocation and distribution of most economic resources, (3) prices for goods and services were fixed by government, (4) people's work, income, and residence were controlled by the state through work units and the people's communes, (5) the state monopolised information through its propaganda machine, (6) the central planners had a deep bias against agriculture and consumer industry and a strong preference toward heavy industry and defence, and (7) `politics in command' was a guiding principle for political and socioeconomic life. But the model associated with some problems since the party-state domination severely constrained freedom and democratic competition within the political and social system such as unfair distribution, stagnation of market economy, recession, depression, and poor production. But with the reformation policy since 1978, the early 1980s, the state disengaged from micro-management moved to a market-based system notified as radical period of the ruling model transformation. The essence of Deng Xiaoping's reform is to make room for free economy markets e.g. private enterprise and multi-scale and field sectors in the socialist system through open door policy but at the same time still maintain the single ruling-party.

Mao Zedong gave a statement saying that PLA is 'the Party's Army,' the army for the people and the socialist country. Its uniqueness is based on experience and the fight they have gone through as opposed to the armies of other countries even with other socialist countries (Long March' experience). The army's characteristics in question is loyalty; loyal to the party, to the people, to the country and to the socialism. (Xiaobo Hu, Gang Lin (Ed.): Transition towards Post-Deng PRC, Singapore Univ. Press, Singapore, 2001.)

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[16] Feaver, P.D., Hikotani, T. and Narine, S.: Civilian Control and Civil-Military Gaps in the U.S., Japan, and PRC, Asian Perspective, Vol. 29, No. 1, 2005.

[17] Since the establishment of PLA, it has become a dominant institution in PRC. Nonetheless, when Deng took over the leadership in 1978, PLA's doctrine was somewhat different where PLA now is becoming more professional and the 'People's War' concept was inculcated and strategy and modern tactic were employed in keeping abreast along with other Western countries. Also, the defence concepts were set as the fourth in priority after agriculture, industrial and technology even though this development is in contradiction to Deng's original doctrine. This development can readily be seen when in 1985 Deng Xiaoping accepted the admission of several influential generals in order to launch China's modernisation process and the influx of foreign technology. This modernisation, in other words implies the military being equipped with defence technology and better logistics and the only channel available is PLA through which the technology can be shared with the civilian technology. In a different context, it is implies that a potential Chinese leader who aspires to hold and retain power needs to have the support of PLA's leaders. Even Deng Xiaoping himself before he gets to hold the leadership of PRC in 1978, he was at one time appointed as PLA's Chief of General Staff and vice chairman of CMC in 1975. Jiang Zemin on the other hand is the CMC's chairman until now. Therefore, it is of no surprise that no matter what Deng or Jiang do to inflict change in terms of PLA's involvement, the policy makers and PLA's involvement in policy is unavoidable (Dipankar Banerjee, Pacific Research, , pp. 8 – 11, August 1996).

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REINFORCED TEAM DYNAMICS THROUGH FOLLOWERSHIP

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ABSTRACT

Team dynamics in military missions have been diagnosed to be the evidence of crucial leader-follower setting. In such condition, a combination of evolving technology and the challenging missions have forced the teams to be creating unique team structures to accomplish task or missions. The compositions of followers and the intensity of social networking in teams have been a research interest of behavioral psychology. The development of a leader-member exchange is based on characteristics of the 'working relationship' as opposed to a personal or friendship relationship. Leaders create unity through demonstration of group-mindedness by making more references to the collective history, the collective identity and interests, and collective efficacy. The more leaders augment follower identification (through role modeling or group socialization), the more followers will likely experience higher feelings of ownership and responsibility. To understand these dynamics, reciprocal effect of both parties are reviewed and discussed. This paper intends to recognize the relationship of leader and follower and how they relate to each other in groups.

Keywords: Followership, follower typology, group dynamics, organizational psychology.

FOLLOWERSHIP AND TEAM DYNAMICS: AN INTRODUCTION

Team theory suggests interesting points to begin with; members of a team often think alike in an insight called 'mental model' [1]. This mental model allows flow of communication and smooth continuation of task implementation. The fact is that, this mental model guides most members to think in a similar way and it is an advantage to task success. In order to have a good structure of mental model, teams have to understand each others' behavior, and so do the leaders. This may include understanding the type of followers that they are.

Followership is a factor that drives organizational effectiveness. Followers' influence the overall organizational achievement, pressure leaders' judgment and more often than not, leaders are occupied with how followers think and behave, thus making followers at the center of decision making. Although the focus on followership in local research is still rare, some studies done in recent years indicate the needs for followers' empowerment

and improvement [2]. Some other research professed the needs for leaders to start looking at their people for a change. Most motivational problems in organization exist because it's 'people' are unhappy and some of this unhappiness is caused by poor understanding in follower behavior.

In understanding followers' behavior, followers are categorized in a model according to their responses and support to leader i.e. as alienated followers, passive followers, conformist followers, pragmatic followers or exemplary followers [3]. This research tends to explore the impact of followership through follower typology model by Kelley and its relationship with organizational citizenship behavior [3]. The potential moderating role of followers' competence will also be assessed. These behavioral patterns could be the turning points of many team conflicts (if any) or team dynamics of a group construction. In military settings where instructions often go bluntly obeyed and performed, a peek into the minds of the followers could cause a big shift into task design, task implementation and success. This is the recipe that even a brilliant plan of battle in the tactical sense can be a complete failure if soldier's followership is bad, while a poor plan can be made to work well if soldier's followership is good [2].

REVIEW OF FOLLOWERS' TYPOLOGIES

Followers' attributions to leaders' behavior affect the acceptance of leadership in groups, thus determine the overall achievement of organizational goals. For the purpose of this review, followers' attributions will focus on two main ideas proposed by Kelly and Chaleff [3, 4, 5].

Kelley's follower typology

Kelley proposed the followers' typology in which he identified five different follower styles [3]. The typology is as follows:

Table 1: Kelley's followers' typology: [2]

Alienated	Deep independent thinkers who do not willingly commit to a leader. They have knowledge, skills and capabilities but focus totally on the weaknesses of the organization and other people.
Passive	Do as they are told, do not think critically, they are not active. They will not take obligations or initiative. Passive followers allow decision and consideration to their superior.

Conformist	More participative than passive followers but do not provide challenge. Conformists often participate actively but do not utilize critical thinking. They accomplish task eagerly without considering the nature of job and assignment.
Pragmatic	Middling in their independence, engagement and general contribution. They have the quality of all four extremes attributions, depending on which style fits the prevalent situation. Pragmatic followers will use any style which benefits their position and reduce risks. They usually appear when difficulty arises and will do anything to help.
Exemplary	Idyllic in almost all ways, excelling at all tasks, engaging strongly with the group, offer intellectual yet receptive support and confront to their leader. These followers are important, independent and energetic; they will take risk when required.

Kelley's followers' typology tells us several important things. One; followers have their own mind. They can form a group of their own and in fact, became a leader themselves if they want to. Followers are not merely horsemen, they make decisions, and they implement instructions. And sometimes, followers guide leaders from falling out of control. Two; there is such thing as a good follower. Kelley named exemplary followers to be the best of all, possessing the other four extreme attributions quite moderately. Exemplary followers are also the brains and the knowledge champions of the organization, and these are the tacit skills that we would want to keep safe. Three; there is 'that' kind of follower that we want to avoid. Every leader wants a follower who is effective and not a burden. To achieve organizational goals, we all demand followers to be ideal and efficient. However Kelley warns us that followers are also human, and some of them are not as efficient. These kinds of followers are either to be trained and nurtured or to be avoided totally.

Chaleff Followers' Classification

"It is the quality of the relationship of leaders and followers, all the way up and down the organization chart, that makes or breaks organizations. Those lower down in the organization have more direct experience with its people, processes and customers and need to be able to influence the leaders' thinking on which way the organization should go. They cannot be intimidated by the power and trappings of office of the leaders to whom they report. Yet, as we know, they often are intimidated." [4]

According to Chaleff, followership determines performance and overall achievement of any organization [4]. Majority of organizational members are followers in the lower group making them the strongest component. A learning organization cannot exist if leaders fail to understand the majority, and earning followers' trust is as important as other focus in achieving organizational goals. Chaleff provides followers' classification based on the extent to which they support leaders as opposed to how much they challenge them [5]. Good followership is a skill that requires courage. Chaleff's classification is as follows:

Table 2: Chaleff's classification of followers

Implementer	Majority of followers, take orders and complete them, with no questions asked.
Partners	Like to be treated as equals to the leader, although they respect the leaders position. Partners are strong supporters but will provide 'intelligent challenge' when necessary.
Individualists	They are not easy followers, think for themselves, often as they want.
Resource	Do what is requested, and always a little more. They are blindly obedient, not so much intelligence and lack courage to provide challenge.

Unlike Kelley who looks at followers' attribution to categorize them, Chaleff puts followers in their own class by looking at the inclination of support that the followers give to their leaders. Some followers are good implementers; they finish each task assigned to them with no questions asked. Some of them are individualists, somewhat hard to follow orders, often causing conflicts. Some followers are very effective they provide challenges to leaders, and often put leaders in an 'alarmed' mode as they know they are being watched by their subordinates. Chaleff's taxonomy of followers' dimension could be seen like a continuum ranging from a difficult type of follower (individualists) up to the most effective type (partners), with implementers and resource being in the middle.

The issue with followership is often this; do leaders understand their followers? The failure of leaders to recognize their followers will result in dysfunctional groups which will contribute to organizational failure. To ensure success, a leader is responsible to show initiative, commitment, and inspiration, among other things to help build healthy leader-follower relations. Followers will not survive without good leaders, and better more, leaders will not survive without good followers.

To integrate these two followers' classifications, which are build up from different aspects, follower types can then be conceptualized in two forms of continuum as below.
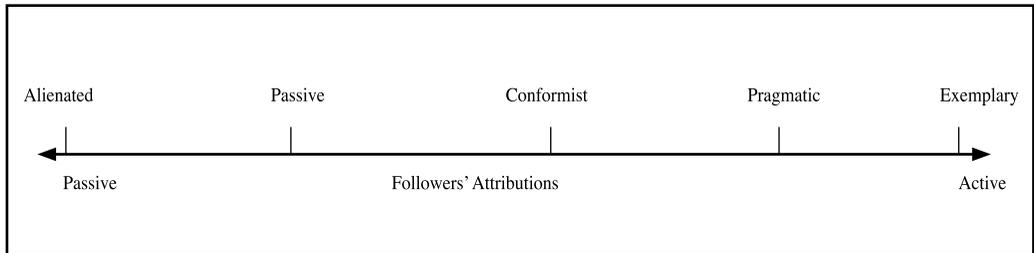
Figure 1: Continuum 1 – Follower typologies based on characteristic attributions
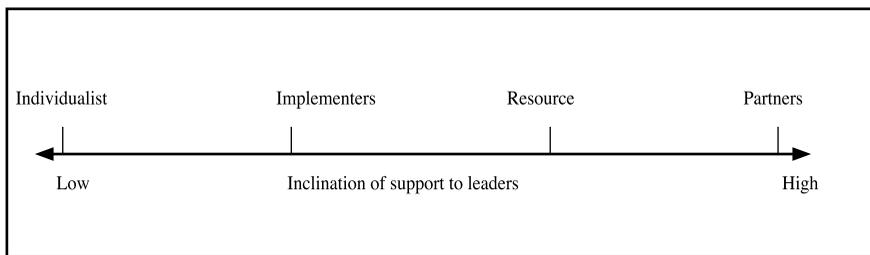
Figure 2: Continuum 2 – Follower typologies based on inclination of support to leaders

These two continuums outline followers' types according to two aspects i.e. followers' attributions and followers' inclination of support to leaders. These two aspects are from different ends but they produce similar categories of follower typologies.

Alienated followers' for instance, are described as difficult followers and self-centered, in which would be similar to describe individualists. These two types of followers are not expected to contribute much to a task and are predicted to negatively relate to assignments. Passive and implementers are best described as yes-people; they are active, yet lack independent thinking. These types of followers take orders, with no questions asked. On the right side of the continuums are followers of resource and conformity. They are obedient, sometimes too much. They follow orders and at times, too bluntly. And the mist efficient types of followers are known as partners or as described by Kelley; pragmatic and exemplary. These three types of followers score at the right end of the continuum where they are high-performers and effective followers. They follow intelligently, providing inputs where necessary and always gives more to leaders and team. These are the most desired types of followers and important to task success.

These continuums, when integrated as a model, will be as below:
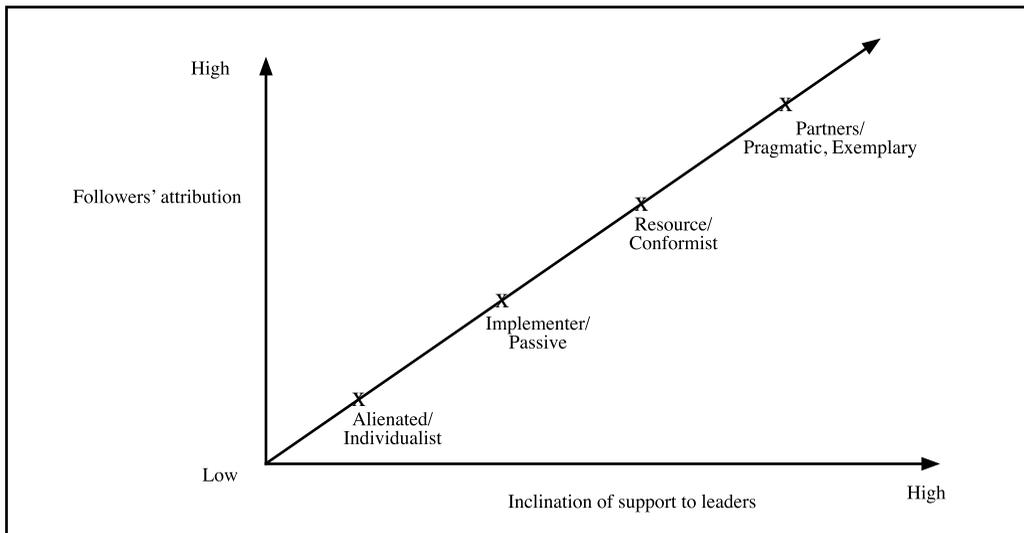
Figure 3: Conceptual model of followers' typologies

When combined, it can be seen that follower types move in a positive linear direction, considering the two aspects mentioned before i.e. follower attribution and their inclination of support to their leaders. It can then be summarized that follower types, when analyzed from these two aspects; attribution and inclination, will result in a 'low-to-high-personality' follower category [6].

FOLLOWERSHIP IN TEAMS: A WAY FORWARD

Human relations are inevitable to sustain the existence of organizations. More often than not, groups with good human relations succeed faster and longer than the groups with weak inter-connections. Sustaining these relationships isn't easy. It requires persistent effort from each organizational member and their surroundings. The essence of organizational membership is leader-follower dynamics. In organizational settings, leadership expectations do not exist in a vacuum. Hence, it is very important for both leader and follower to understand each other's needs. An enthusiastic leader might frustrate himself in his effort to build a relationship with an avoidant follower, and vice versa. In maintaining leader-follower dynamics, Van Knippernberg found out that leaders act through their followers and a leader's behavior is successful because it is translated into followers' actions by the followers' self-construal [7]. A leader who activates followers' self-construal will somehow affect followers' feeling, thoughts and actions in the name of group norms.

In a team, it is important that followers identify their leaders as a respectable icon, with a distinguished personality. Leaders will ensure that they receive substantial amount of identification from his followers. In order to create this social identification, leaders sometimes have to prove their charisma and outstanding self-worth. There is consistent evidence that social identification leads to greater efforts on behalf of the group. As leaders are also members of the group, identification would also serve as a motivator to act on behalf of the group's interest [8]. Followers will also identify their leaders and recognize them through the establishment and enunciation of a convincing vision. Identified leaders tend to show a great tendency of demonstrating collective mindset by referring to shared history, identity and interest and collective efficacy [9]. These enunciations of visions concerning the organization's projection of plan will create a sense of collective interest [9, 10]. An objective vision that is accepted by organizational members may influence the process of achieving it. Followers will find it easier to adapt to the vision and adjust the vision collectively.

International University of Japan in their research entitled "*Primary Study of Leader and Follower Relationship in Asia: Empirical Study on Managers in Asian Countries*" provided us with some interesting result to start off: Malaysian (organization) followers lack empowerment [11]. Empowerment factor between Malaysia and other four Asian countries in their research showed an impressive significance difference. One of their assumptions is the impact of Malaysian culture on managerial influence. Malaysia has been recognized as a country that puts emphasis on hierarchy and enforcement of protocol in which these factors could have influence on the degree of empowerment given to followers. Their result asserts us that Malaysian followers are still in need of a lot of improvement. Malaysian leaders are significant, more and more global organizations emerge over the years, but attention is now vital to be given to the followers. This research also confirmed that leader and follower relationships affect followers' satisfaction in an organization.

CONCLUSION

Military settings are a good area of research as commands are delivered on a customary basis, and mostly being bluntly followed. So many could be told through followers' conformity in military task implementation since in this setting, hierarchy is the core structure of its squad build-up. Unlike normal organizational settings, followers' behavior could be influenced by many other factors such as leaders' preference, task difficulty and reward structure. In these normal settings, followers often have the 'choice' to follow, considering these influential factors. For armed forces, instructions are followed as it is, producing obedient but complex followers. It is inside their minds that we want to explore, discovering their true personalities and typologies and whether their obedience is honest or vice versa. More often than not, teams in military-based organizations have shown evidence of success in assignments completion. Their ability to produce likenesses in 'systems thinking' is mirrored in goal achievement and group norms.

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EVALUATION OF THE EFFECT OF RADIO FREQUENCY INTERFERENCE (RFI) ON GLOBAL POSITIONING SYSTEM (GPS) SIGNALS: COMPARISON OF FIELD EVALUATIONS AND GPS SIMULATION

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ABSTRACT

Given the various incidents of intentional and unintentional jamming of Global Navigation Satellite System (GNSS) signals, the Science & Technology Research Institute for Defence (STRIDE) conducted a series of tests to study the effect of radio frequency interference (RFI) on Global Positioning System (GPS) signals. The initial tests were conducted via field evaluations using live GPS signals. However, such field evaluations are subject to various error parameters, including ionospheric and tropospheric delays, satellite clock, ephemeris and multipath errors, satellite positioning and geometry, and unintentional signal interferences and obstructions, all of which are uncontrollable by users. The ideal GNSS receiver evaluation methodology would be using a GNSS simulator which can be used to generate multi-satellite GNSS configurations, transmit GNSS signals which simulate real world scenarios, and adjust the various error parameters. This would allow for the evaluations of GNSS receiver performance under various repeatable conditions, as defined by users. As the evaluations are conducted in controlled laboratory environments, they will be inhibited by unwanted signal interferences and obstructions. To this end, under the Tenth Malaysian Plan (RMK10) project entitled Evaluation of the Effect of Radio Frequency Interference (RFI) on Global Positioning System (GPS) Signals via GPS Simulation, GPS simulation was employed to study the effect of RFI on GPS signals. This paper is aimed at providing a comparative discussion on GPS RFI operability tests conducted via field evaluations and GPS simulation, in terms of methodologies and results. This comparison will be used to highlight the advantages of conducting such tests via GPS simulation.

Keyword: Global positioning system (GPS), global navigation satellite system (GNSS), radio frequency interference (RFI), radio frequency identification (RFID). probable error, carrier to noise density (C/No) position dilution of precision (PDOP)

INTRODUCTION

There is a steady growth in the entrenchment of Global Navigation Satellite Systems (GNSS) in current and upcoming markets, having penetrated various consumer products, such as cell phones, personal navigation devices (PNDs), cameras and assimilation with radio-frequency identification (RFID) tags, for various applications, including navigation,

surveying, timing reference and location based services (LBS). While the Global Positioning System (GPS), operated by the US Air Force (USAF), is the primarily used GNSS system worldwide, the upcoming Galileo and Compass systems, and the imminent conversion of *Global'naya Navigatsionnaya Sputnikovaya Sistema* (GLONASS) signals from frequency division multiple access (FDMA) to code division multiple access (CDMA) look set to make multi-satellite GNSS configurations the positioning, navigation & timing (PNT) standard for the future.

However, many GNSS users are still not fully aware of the vulnerabilities of GNSS systems to various error parameters, such as ionospheric and tropospheric delays, satellite clock, ephemeris and multipath errors, satellite positioning and geometry, and signal interferences and obstructions. These error parameters can severely affect the accuracy of GNSS readings, and in a number of cases, disrupt GNSS signals [1-8].

One particular vulnerability that has received significant attention is jamming. Jamming is defined as the broadcasting of a strong signal that overrides or obscures the signal being jammed [5, 6, 12-16]. Since GNSS satellites, powered by photocells, are approximately 20,200 km above the Earth's surface, GNSS signals that reach the Earth have very low power levels (approximately -160 to -130 dBm), rendering them highly susceptible to jamming [9-11]. For example, a simple 1 W battery-powered jammer can block the reception of GNSS signals approximately within a radius of 35 km from the jammer [14]. Given the various incidents of intentional and unintentional jamming of GNSS signals, including military GNSS signals [12, 17-20], the development of various GNSS anti-jamming technologies has received significant attention [15, 21-27]. In addition, many current GNSS receiver evaluations concentrate on radio frequency interference (RFI) operability [29-35].

The Science & Technology Research Institute for Defence (STRIDE) conducted a series of tests to study the effect of RFI on GPS signals [36-38]. These tests conducted were via field evaluations using live GPS signals. However, such field evaluations are subject to various error parameters which are uncontrollable by users.

The ideal GNSS receiver evaluation methodology would be using a GNSS simulator which can be used to generate multi-satellite GNSS configurations, transmit GNSS signals which simulate real world scenarios, and adjust the various error parameters. This would allow for the evaluations of GNSS receiver performance under various repeatable conditions, as defined by users. As the evaluations are conducted in controlled laboratory environments, they will be inhibited by unwanted signal interferences and obstructions [39-42]. To this end, under the Tenth Malaysian Plan (RMK10) project entitled *Evaluation of the Effect of Radio Frequency Interference (RFI) on Global Positioning System (GPS) Signals via GPS Simulation*, GPS simulation was employed to study the effect of RFI on GPS signals [43, 44].

This paper is aimed at providing a comparative discussion on GPS RFI operability tests conducted via field evaluations and GPS simulation, in terms of methodologies and

results. This comparison will be used to highlight the advantages of conducting such tests via GPS simulation.

FIELD EVALUATIONS

Methodology

The tests were conducted at the STRIDE Kajang Block B car park (Figure 1). The apparatus used in the tests were an Advantest U3751 spectrum analyser [45], an IFR 2023B signal generator [46], a Hyperlog 60180 directional antenna [47], and a notebook running GPS Diagnostics v1.05 [48]. The test setup employed is as shown in Figure 2. The interference signal used was an FM signal with carrier frequency of 1,575.42 MHz (the fundamental frequency of the GPS L1 coarse acquisition (C/A) signal), peak deviation of 1 MHz and information frequency of 5 kHz.

Findings

Dinesh et al. [36] studied the minimum interference signal power levels required to jam various GPS receivers (Figure 3), while Dinesh et al. [37] studied the effect of RFI on GPS receivers over various distances (Figure 4). It is observed that the minimum interference signal power levels required to jam GPS receivers are significantly high as compared to the corresponding GPS signal power levels. The noise-like C/A code structure, which modulates the L1 signal over a 2 MHz bandwidth, allows for the signal to be received at low levels of interferences. The P(Y) code (restricted to the US military) has a more robust structure, modulating the L1 and L2 signals over 20 MHz bandwidths, and has better resistance to interference. It is observed in Figure 4 that for the first 40 m of the test distance, there is a drop in minimum required jamming power levels, due to the presence of the STRIDE Block B building, which caused obstruction to GPS signals.

Figure 1: Test area located at N 2º 58' 3.4" E 101º 48' 35.2".
(Source: Screen capture from Google Earth)
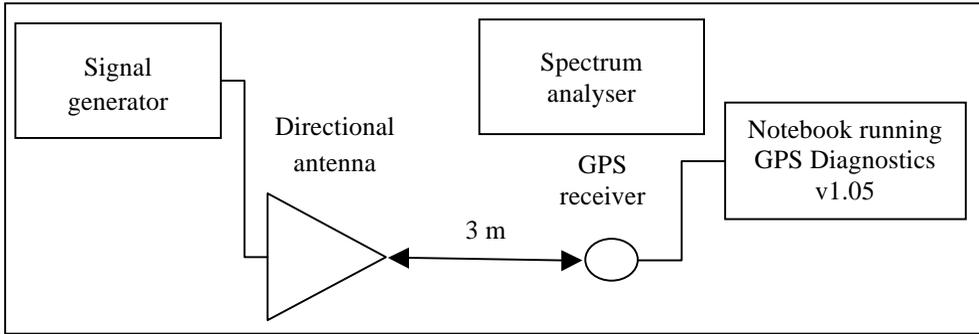
Figure 2: The test setup employed to study the effect of RFI on GPS signals via field evaluations.
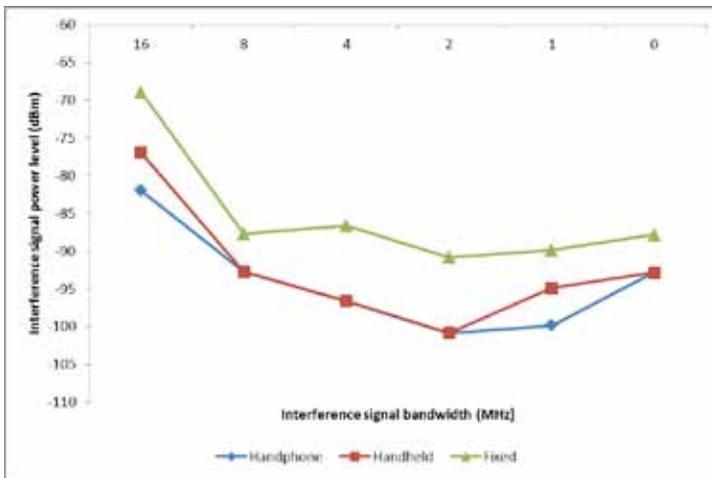
Figure 3: Minimum interference signal power levels required to jam various GPS receivers. (Adapted from Dinesh et al. [36])
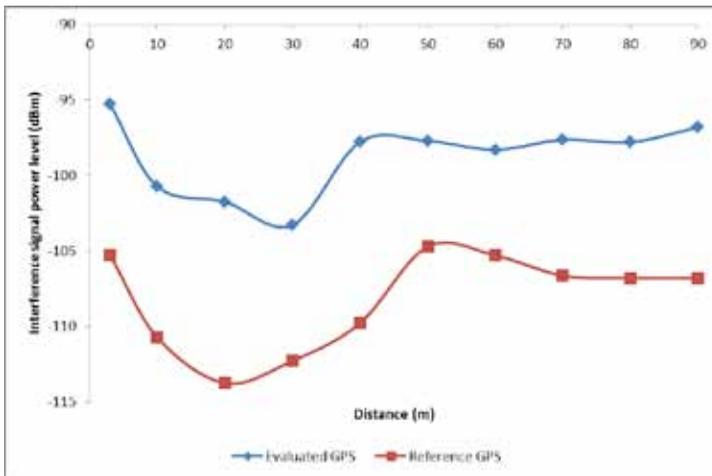
Figure 4: Minimum interference signal power levels required to conduct GPS jamming over various distances. (Source: Dinesh et al. [37])

However, interference signals with power levels below the minimum jamming threshold can still severely distort GPS accuracy, rendering it useless for applications requiring high precision. Hence, Dinesh et al. [38] studied the effect of RFI on GPS accuracy (Figure 5). With increasing interference signal power level, probable error values increase due to decreasing carrier-to-noise density (C/N0) levels for GPS satellites tracked by the receiver, which is the ratio of received GPS signal power level to noise density. Lower C/N0 levels result in increased data bit error rate when extracting navigation data from GPS signals, and hence, increased carrier and code tracking loop jitter. This, in turn, results in more noisy range measurements and thus, less precise positioning [2, 49-51]. For the readings taken, the amount of increase of probable error values varied significantly based on GPS coverage and various error parameters, including ionospheric and tropospheric delays, satellite clock, ephemeris and multipath errors, and unintended signal interferences and obstructions.
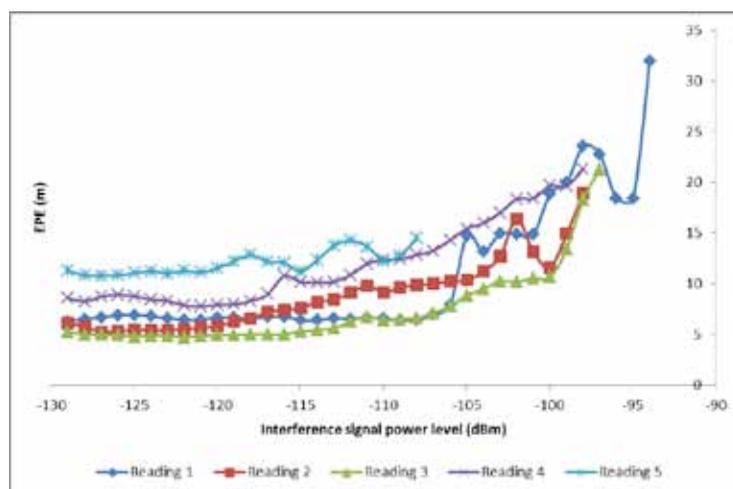
Figure 5: The effect of RFI on GPS estimate probable error (EPE).
(Adapted from Dinesh et al. [38])

On the whole, the results of these tests have demonstrated the disadvantages of field GNSS evaluations. Without the ability to control the various GNSS error parameters, it is difficult to effectively study the effect of any particular error parameter, in the case of this study, interference, on GNSS accuracy. This highlights the importance of using a GNSS simulator for such tests, whereby the tests can be done under repeatable user-controlled conditions.

GPS SIMULATION

Methodology

The simulated GPS signals were generated using an Aeroflex GPSG-1000 GPS simulator [52], while two handheld GPS receivers were used; Garmin GPSmap 60CSx

[53] (evaluated GPS receiver) and Garmin GPSmap 60CS [54] (reference GPS receiver). The tests were conducted in the STRIDE semi-anechoic chamber [55] using the test setup shown in Figure 6. The following assumptions were made for the tests:

i)   No ionospheric or troposheric delays
ii) Zero clock and ephemeris error
iii) No multipath fading or unintended obstructions
iv) No unintended interference signals.

The date of simulation was set at 10 January 2012. The almanac data for the period was downloaded from the US Coast Guard's web site [56], and imported into the GPS simulator. For each GPS receiver, the test procedure was conducted for coordinated universal time (UTC) times of 0000, 0300, 0600 and 0900 for the following coordinates:

i)   N 2° 58' E 101° 48' (Kajang, Selangor, Malaysia)
ii) N 39° 45' W 105° 00' (Denver, Colorado, USA)
iii) S 16° 55' E 145° 46' (Cairns, Queensland, Australia)
iv) S 51° 37' W 69° 12' (Rio Gallegos, Argentina).
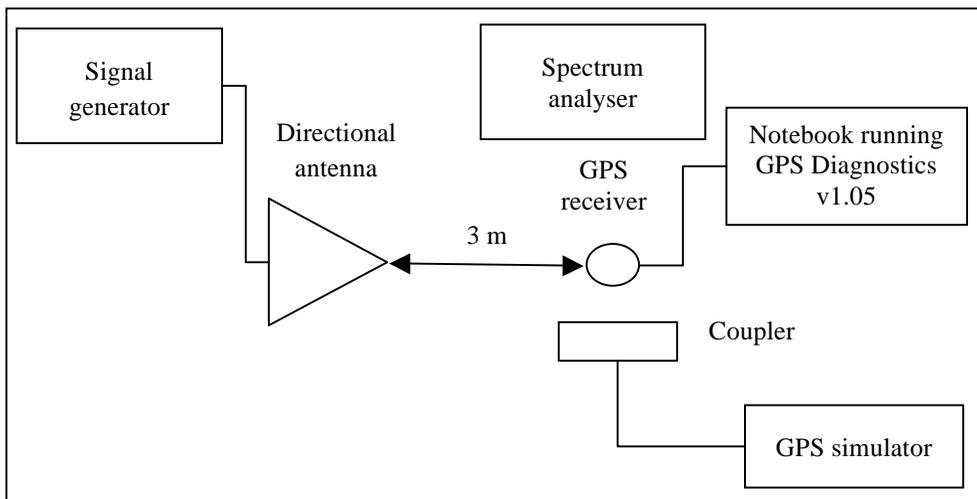
Figure 6: The test setup employed to study the effect of RFI on GPS signals via GPS simulation.

The Trimble Planning software [57] was used to estimate GPS satellite coverage at the test areas for the period of the tests (Figure 7).

(a)

(b)

(c)

(d)
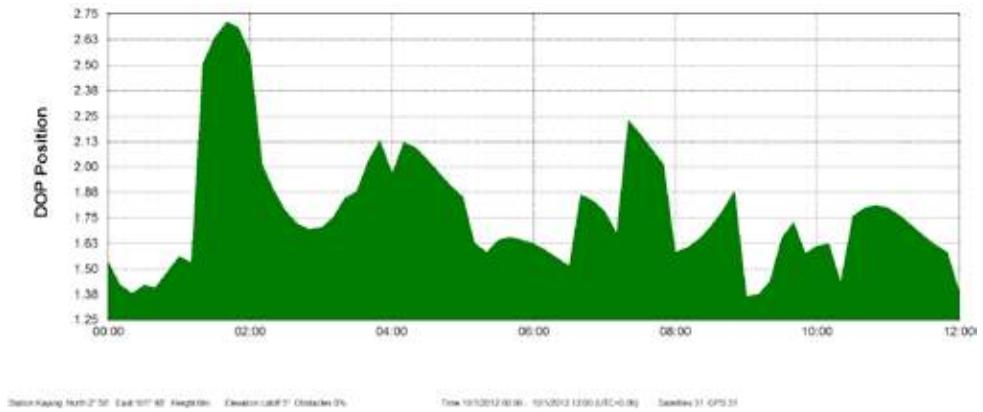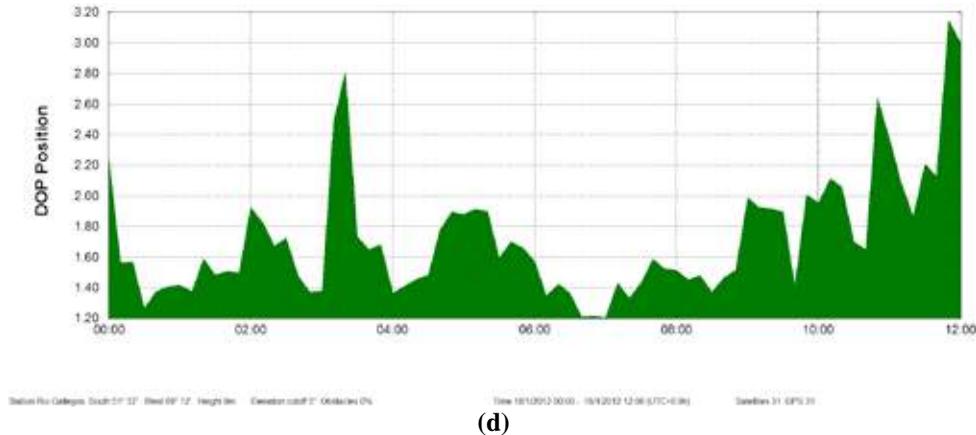
Figure 7: Position dilution of precision (PDOP) of GPS coverage at the test areas for the period of the tests: (a) Kajang (b) Denver (c) Cairns (d) Rio Gallegos. (Source: Screen captures from the Trimble Planning software)

Findings

The results of the study conducted in Dinesh et al. [43] on the minimum interference signal power levels required to jam the GPS L1 C/A signal are shown in Figures 8 and 9. It is observed that the absence of other error parameters resulted in the required minimum jamming power levels in this study to be significantly higher as compared to field evaluations conducted in Dinesh et al. [36-38].

Dinesh et al. [44] employed GPS simulation to study the effect of RFI on GPS accuracy (Figures 10-13). Varying probable error patterns are observed for the each of the readings. This is due to the GPS satellite constellation being dynamic, causing varying GPS satellite geometry over location and time, resulting in GPS accuracy being location / time dependent [2, 38, 49, 50, 58]. In general, the highest probable error values were observed for readings with the highest PDOP values (Kajang at 0300, Denver at 0600, Cairns at 0000 and Rio Gallegos at 0300), while the lowest probable error values were observed for readings with the lowest PDOP values (Kajang at 0900, Denver at 0300, Cairns at 0300 and Rio Gallegos at 0600).

For all the readings taken, the evaluated GPS receiver recorded lower probable error values and higher minimum required jamming power levels as compared to the reference GPS receiver. This occurred as the evaluated GPS receiver has higher receiver sensitivity, and hence, is able to obtain lower PDOP values. In addition, it has lower receiver noise, reducing the value of its user equivalent ranging error (UERE), which is the total expected magnitude of position errors due to measurement uncertainties from the various error components for a particular receiver. The probable errors of the evaluated GPS receiver increased to values that are significantly higher than then reference GPS receiver as the interference signal power levels that are just slightly lower than the evaluated GPS receiver's jamming threshold cause significant degradation of accuracy.
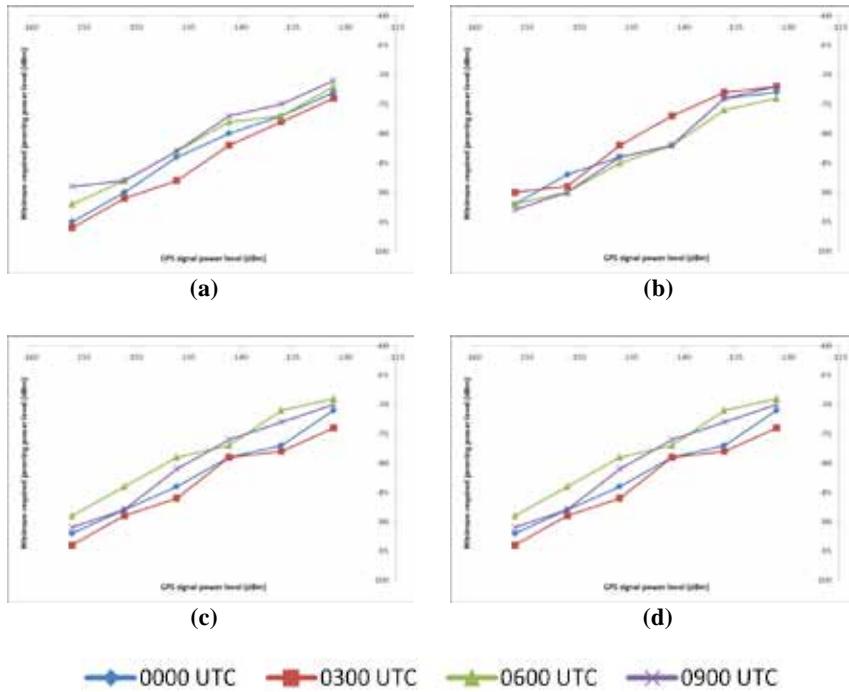
Figure 8: Minimum interference signal power levels required to jam the evaluated GPS receiver at: (a) Kajang (b) Denver (c) Cairns (d) Rio Gallegos.
(Source: Dinesh et al. [43])
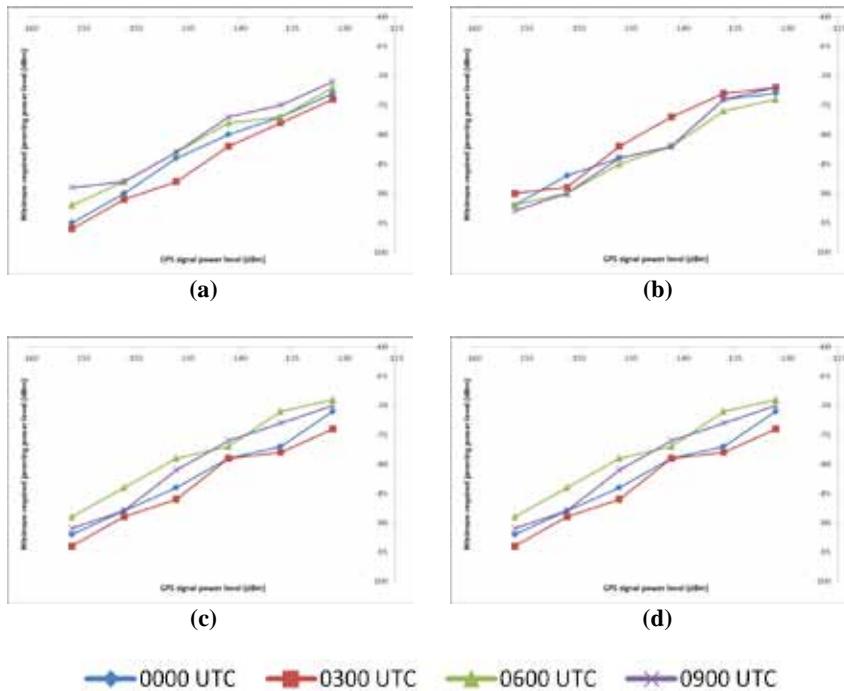
Figure 9: Minimum interference signal power levels required to jam the reference GPS receiver at: (a) Kajang (b) Denver (c) Cairns (d) Rio Gallegos.
(Source: Dinesh et al. [43])
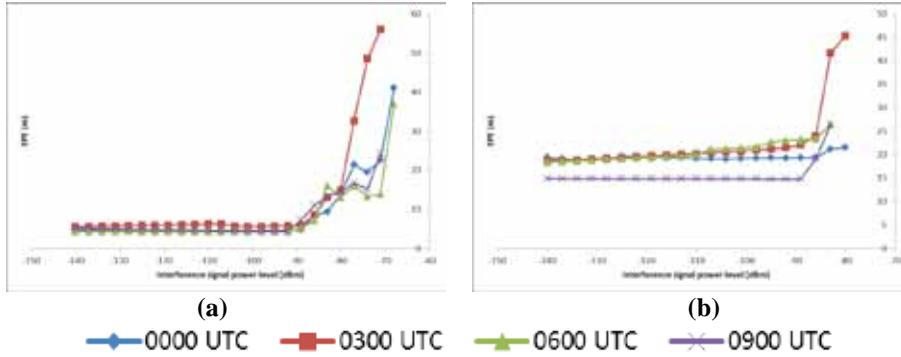
Figure 10: Comparison of recorded EPE values of varying times at Kajang for the (a) evaluated and (b) reference GPS receivers.
(Source: Dinesh et al. [44])
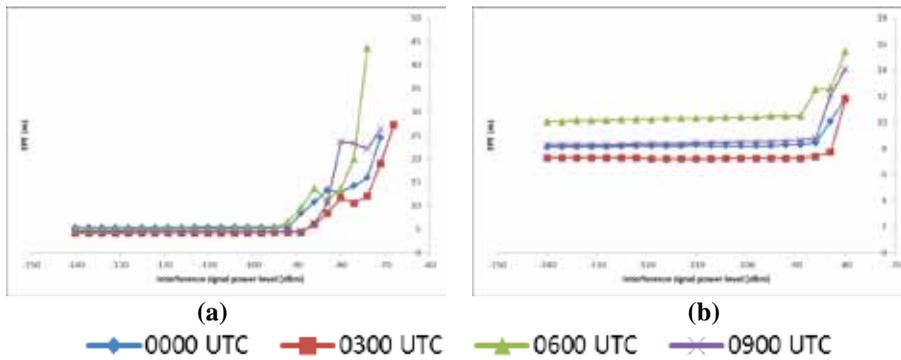
Figure 11: Comparison of recorded EPE values of varying times at Denver for the (a) evaluated and (b) reference GPS receivers.
(Source: Dinesh et al. [44])
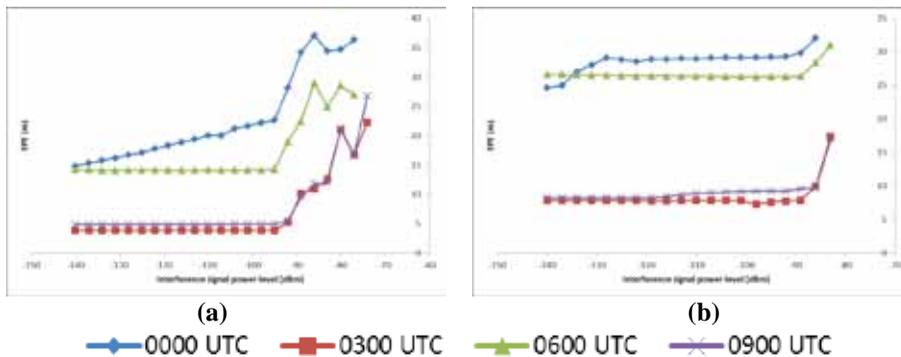
Figure 12: Comparison of recorded EPE values of varying times at Cairns for the (a) evaluated and (b) reference GPS receivers.
(Source: Dinesh et al. [44])

(a)   (b)

—◆—0000 UTC   —■—0300 UTC   —▲—0600 UTC   —✕—0900 UTC
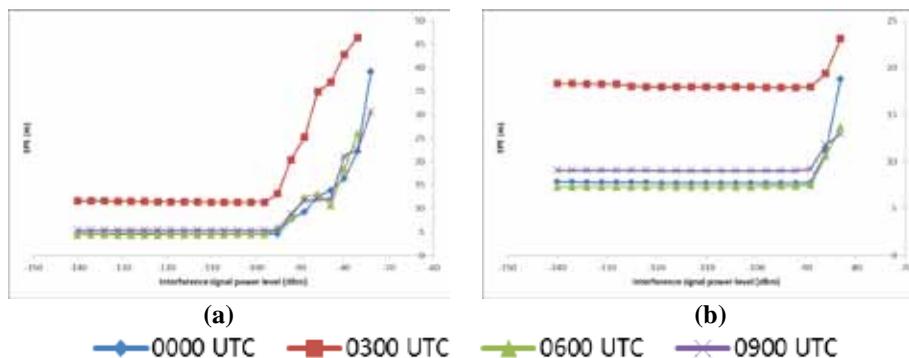
Figure 13: Comparison of recorded EPE values of varying times at Rio Gallegos for the (a) evaluated and (b) reference GPS receivers.
(Source: Dinesh et al. [44])

CONCLUSION

While any GNSS receiver evaluation should encompass field tests, such tests have limitations in terms on anticipating and controlling the various error parameters as well as inability to repeat the test scenarios. In contrast, GNSS simulation provides advantages of repeatability, allowing for specific test scenarios to be applied repeatedly with varying user-controlled parameters. In addition, these evaluations are conducted in tightly controlled environments to eliminate anything that could influence the repeatability of the tests. Hence, a complete evaluation of GNSS receivers, including for RFI operability, should encompass both field tests and GNSS simulation.

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QUANTITATIVE EVALUATION OF CAMOUFLAGE PATTERNS ON TEXTILE MATERIALS USING FRACTAL ANALYSIS

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ABSTRACT

Disruptive patterns are used on military uniforms as camouflage to blend in with the surrounding. Recent camouflage designs are based on small fractal-like patterns emulating natural surroundings. Present evaluations of camouflage patterns mostly rely on human visual assessment, which can be subject to bias. To this end, this paper proposes a photographic and subsequent fractal analysis for the quantitative evaluation of the effectiveness of disruptive camouflage patterns on textiles. The analysis shows that it is possible to quantify the fractal entities on textiles and the surrounding by the use of fractal dimension and lacunarity to provide a measure of matching between the corresponding colours of a camouflage pattern and its background surrounding. Using the proposed method, an effective camouflage pattern was developed to be used in a tropical forest environment.

Keywords: *Camouflage patterns; fractal dimension; lacunarity; box counting method; lab colourspace.*

INTRODUCTION

Camouflage patterns are extensively used by military forces in efforts to blend assets and personnel in operational surroundings [1-4]. For many years, camouflage patterns have been designed embodying elements that disrupt regular outlines in colours closely matched to the environment. Earlier patterns tended to be composed of large blocks or tiles, often hand composed. More recently, smaller shapes forming an almost 'fractal' property are being adopted in so-called 'digital' designs [5-8]. Advances in fabric printing technology and computerised designs have enabled more complicated patterns to be made than ever before [3, 4, 10-13].

The effectiveness of a camouflage pattern requires evaluation of the pattern in its intended operational surrounding. Evaluations of camouflage patterns have mostly relied on visual assessment in various conditions of light and environment [13-20]. In some cases, visual aids such as binoculars or night vision goggles are used to aid in the evaluation. Whether aided or unaided, present methods of evaluating the effectiveness of the camouflage patterns are still subject to human assessment and interpretation.

This paper proposes a photographic and subsequent image analysis method for the evaluation of fabric or textile camouflage patterns. The work is intended to develop a consistent method of evaluating camouflage patterns free from human bias. Although the work describes camouflage patterns on textiles, the proposed method can be extended to painted surfaces, for example on metals, wood and concrete, which may form parts of vehicles or infrastructure. The pattern spatial analysis adopted in this work is based on fractal analysis.

FRACTAL ANALYSIS

The term 'fractal' was coined in 1975 by Benoit Mandelbrot, a mathematician who is mostly attributed to this subject. Fractals describe, in a simple but quantitative manner, many things in nature that possess self-symmetry over many orders of scale [21-25]. Landscapes, trees, leaves and branches have often been subjects for fractal analysis by many researchers [21-23, 26-28].

Man-made objects tend to have regularity in form and may not be well described by fractal analysis. However, an exception is seen in art and some creative design as well as urban development images captured via remote sensing [29-31]. At the outset, camouflage designs had been a form of work of art, where the designs were made by graphic artists. Recent work on military camouflage design using computers consist of small unit shapes that are combined in form and colour to produce an almost fractal form. It follows, therefore, that fractal analysis should be applicable to the analysis of military camouflage patterns. This was demonstrated in the works by Billock *et al.*, [6], Friskovec *et al*. [7], Friskovec and Gabrijelcic [8], and Zou *et al.* [9], who successfully applied fractal analysis on camouflage patterns on textiles.

For this work, fractal analysis is applied to both the pattern on the textile as well as the background in order to assess how closely matched the man-made camouflage pattern is to the surrounding environment. Two parameters of fractal analysis are extensively used in this work. The first is 'fractal dimension', a quantity that relates increasing detail to increasing scale. The second is 'lacunarity', a quantity that describes the spatial distribution of the fractal entities in relation to its background. Previous studies, by Du and Yeo [32], Chun *et al*. [33], Borys *et al*. [34], and Dong [35], looked at the use of lacunarity analysis for a number of applications such as in synthetic aperture radar (SAR) imaging, soil analysis and cancer cell behaviour. Ohta *et al*. [36] used fractal dimension to characterise visual features of textile designs. More recently, Kilic & Abiyev [37] evaluated the synergy between fractal dimension and lacunarity in texture recognition. It is due to these earlier studies that the present study explored the use of fractal dimension and lacunarity to quantify man-made fractal-like military camouflage designs against the natural surroundings.

While various methods have been proposed for the computation of fractal dimension and lacunarity, in this study, the box counting method is employed due its simplicity and

automatic computability [21, 22, 24, 25]. In this method, a boxed grid is placed over the region of interest (ROI) and the number of boxes containing fractals as well as the pixels within the boxes is counted. The boxed grid is then scaled down in size and the process repeated. The fractal dimension D_B measured by box counting is defined as:

$$D_B = -\lim_{\varepsilon \to 0}\left[\frac{\log N}{\log \varepsilon}\right] \qquad (1)$$

where N is the number of boxes filled by the fractal shapes at a particular scale ε.

Lacunarity $\varLambda$ is defined as:

$$\Lambda_\varepsilon = \left(\frac{\sigma}{\mu}\right)^2 \qquad (2)$$

where σ/μ are the covariances of the pixel counts at the scale ε. The mean value of $\varLambda_\varepsilon$ obtained over all ε is taken as the value of $\varLambda$ of the fractals within the ROI.

Throughout this work, a plug-in code called *FracLac* (Version 2.5, Release 1e) running under *ImageJ* was used for the analysis. The routine was set to perform box counting four times over the same ROI but sliding the initial boxed grid by an amount in order to avoid counting over the same areas. By doing this, four sets of D_B and $\varLambda$ are obtained, whose averages provide a better estimate of the quantities as well as deriving error estimates.

METHODOLOGY

Photographic Procedure for Field Image Capture

Camouflage patterns printed on textiles were hung vertically flat in a jungle surrounding. In the same field of view, a colour calibration cube (Spyder calibration cube) was hung in order to facilitate colour balance correction of the foliage and textile (Figure 1(a)).

Interchangeable lens digital cameras (by Olympus, Nikon and Canon) were used to image the setup. High resolution imaging lenses with angles of view ranging from 30 - 50°were used to photograph the setup, arranging to include the textile to cover between approximately 25 - 50% of the entire image, with the surrounding occupying the rest of the image. In this manner it was ensured that both textile and surrounding were photographed under identical lighting condition, thus facilitating direct comparison between the two.

Due to the low illumination conditions under a jungle canopy, the most practicable combination of aperture, shutter speed and ISO speed setting was used to ensure sharp images, yet possessing a wide dynamic range with minimal noise. Support in the form

of tripods or monopods were used to minimise camera shake, while the cameras' image stabilisation systems were engaged to avoid movement blur. Photographs were initially taken in both uncompressed RAW and compressed JPEG formats. However, with subsequent analysis, it was found that using JPEG with the least compression sufficed for this work. As a matter of procedure, exposures were bracketed to $\pm$1.5 exposure value of the metered value so that images with the correct exposure possessing no blown highlights are available for further analysis.

Post-processing of the images was kept at a minimal. Apart from in-camera correction for distortion and white balance, the images were further corrected for white balance by defining the 18% grey, 100% white and 100% black values obtained on the Spyder calibration cube. This step was realised, in *Adobe Photoshop* or *GIMP*, on images whose brightness histograms remained within the system dynamic range. This allowed for fidelity to be preserved as much as possible in the image for the subsequent fractal analysis.

Fractal Analysis of the Captured Images

FracLac requires binary images (pure black and white) in order to function. To obtain binary images using *ImageJ*, the digital images were first converted from the native RGB (red, green, blue) colourspace to the Lab (luminance, red-green, blue-yellow) colourspace. This was done because dyes used in textile printing are defined in Lab colourspace. The captured digital images contained a wider gamut of colours of the environment, but the introduced textiles contained a smaller set of colour hues. It would then be appropriate to look for the narrower colour gamut in the surrounding defined by the colours present on the textiles for similarity in content. The use of Lab colourspace allowed this to be done more effectively than using RGB colourspace. In addition, since Lab colourspace is defined as possessing values between -127 and +127 for each of the 3 axes, only 8 bits are used to describe each axis. Hence, the use of JPEG, with 3x8 bit images is sufficient for this work, thus simplifying image processing and negating the use of RAW images.

Each colour present on the textile was selected in turn by adjusting threshold values of *L*, *a* and *b*, being careful that the threshold values covered only the specific colours on the textile. The same values of *L*, *a* and *b* were then applied to the background to select features or parts of features with the same colour and hue as the dye on the textile.

Box counting was performed using *FracLac* for a defined region within the textile and an adjacent region in the background. Values of fractal dimension and lacunarity were obtained to compare the textural and spatial characteristics of fractal entities on the textile and in the background. Errors and correlation coefficients related to the analysis were preserved as an indication of precision.

RESULTS AND DISCUSSION

Initial Results

The proposed method was initially tested on a piece of camouflage material in a tropical secondary forest environment. The tropical secondary forest is typified by a mixture of tall trees creating a top canopy and bushy undergrowth that grows where light penetrates the top canopy. Figure 1(a) shows a typical photographic setup, while Figure 1(b) shows the binary image formed only by a range of green colour selected based on the dye used on the textile. The background forest also displayed the same range of green as on the textile.

It can clearly be seen that the textile exhibits a regular pattern that appears quite uniform throughout (except where there are creases), whereas the background environment appears random with a spread in density of features. The question arises if fractal analysis can equally be applied to areas covered by the textile and the background environment. Furthermore, how large does the ROI need to be to adequately describe the fractal entities present?

(a) **(b)**

Figure 1: (a) A typical experimental setup involving a textile material hung vertically in a forest environment. In the centre of the image is the Spyder colour calibration cube hung on a thin pole. (b) A binary image formed by selecting Lab values of a specific dye (green in this case) on the textile. The same values of Lab also selected similar green colours in the background. The regularity of pattern caused by the printing process is seen on the textile, but the corresponding leaves in the environment are random.

Two sets of analyses were done to satisfy the above question. In the first instance, a small box covering approximately 10% of the textile area was chosen for computation of D_B and Λ. The box was then moved around the textile randomly to arrive at the respective values of D_B and Λ. The process was repeated for the background. Table 1 shows the results of this analysis.

In the second instance, computation of values of D_B and Λ was performed using successively larger boxes, starting with 10% of the textile area. The process was then repeated for the background. Table 2 shows the results of this analysis.

Both Tables 1 and 2 show similar group results. In the case of the small randomly-placed boxes (Table 1), the results are consistent within the group and show a normal statistical fluctuation. The values of D_B and $\varLambda$ obtained for the textile area show a smaller spread compared to that for the background. This is to be expected with the regularity in pattern on the textile, as opposed to the random nature of the background.

Table 1: Results of performing box counting using a small box (approximately 10% of textile or background area) placed randomly on the areas of interest.

	D_B	Mean D_B	$\varLambda$	Mean $\varLambda$
Similar sized small boxes on textile	1.71		0.64	
	1.68		0.40	
	1.68	1.70 ± 0.02	0.55	0.57 ± 0.12
	1.71		0.52	
	1.70		0.73	
Similar sized small boxes on background	1.54		0.91	
	1.55		1.52	
	1.59	1.52 ± 0.08	1.05	1.40 ± 0.43
	1.38		1.97	
	1.56		1.53	

Table 2: Results of performing box counting using successively larger boxes on the areas of interest.

	D_B	Mean D_B	$\varLambda$	Mean $\varLambda$
Successively enlarged boxes on textile	1.69		0.59	
	1.72		0.56	
	1.74	1.74 ± 0.03	0.47	0.52 ± 0.06
	1.77		0.50	
	1.75		0.46	
Successively enlarged boxes on background	1.55		1.02	
	1.56		1.35	
	1.56	1.57 ± 0.02	1.25	1.20 ± 0.14
	1.59		1.10	
	1.59		1.29	

When the box size is increased, it can be seen that the values of D_B plateau slightly to values slightly larger than the value obtained for a small box. On the other hand, the values of $\varLambda$ dip slightly and exhibit a smaller spread. The inference that can be made here is that box counting using *FracLac* can be applied to both textile pattern and random background areas, provided a sufficiently large area is used for setting up the ROI. In selecting the ROI, it is also important not to select features which cannot represent the overall fractal entities. An example of such is the creased area on the left hand edge of the textile, which shows a different pattern to the rest of the material. In the case of the background, the presence of large tree trunks or ground must be excluded in the analysis, unless the camouflage pattern is designed with those entities in mind.

Applying the methodology of analysis to the other two colours present on the textile, namely brown and sand, gave rise to the results shown in Figure 2. The values of fractal

dimension and lacunarity are different for the patterns formed by the different colours. It can also be seen that the fractal dimensions for the camouflage textile and background are also different. It should be noted that an image with small distributed fractal shapes has a smaller fractal dimension. With box counting, a straight line has a fractal dimension of 1, whereas a filled box has fractal dimension of 2. In this work, the values of fractal dimensions of entities on the textile and in the forest background lie between 1 and 2, indicating that the respective features lie between straight lines and regular filled shapes. In the case of lacunarity, images with more empty spaces give rise to a larger lacunarity values.
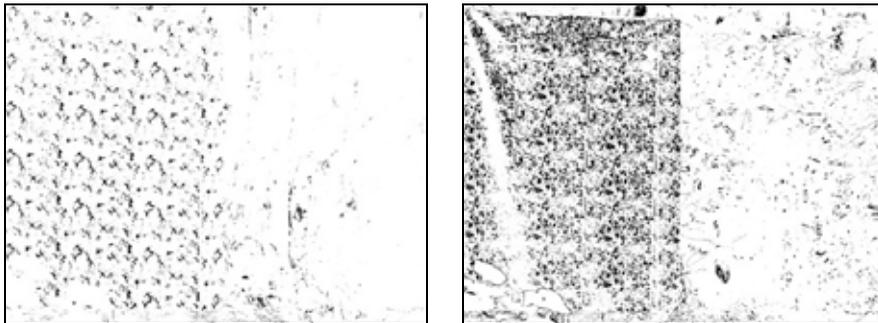
	Brown		Sand	
	Textile	**Background**	**Textile**	**Background**
D_B	$1.67 + 0.12$	$1.23 + 0.14$	$1.82 + 0.06$	$1.55 + 0.14$
$\varLambda$	$0.88 + 0.04$	$7.70 + 0.01$	$0.35 + 0.16$	$1.51 + 0.02$

Figure 2: Applying box count fractal analysis on features revealed by selecting brown and sand Lab values on the textile in Figure 1(a) shows dissimilarity between fractal dimension and lacunarity values of features on the material and in the background. Although it can be discerned visually, the proposed method provides quantitative values of matching between the corresponding colours of the camouflage pattern and its background surrounding.

Implementation on Improved Camouflage Patterns

The objective of the exercise in obtaining a good camouflage design is then simply to obtain similar values of fractal dimension and lacunarity between features on the textile and in the background. This statement oversimplifies the problem because both fractal dimension and lacunarity are somewhat intertwined for the case of a forest scenery. Making the fractals smaller to match the scenery can result in an increase in lacunarity, and vice versa. Despite that, it is possible to design textiles with the right combination of colours and shapes to match the fractal dimension and lacunarity values of the background in which it is placed.

Figures 3-6 provide examples of the performances of such design using four-colour printed textiles. For each set, a colour photograph of the textile is captured against the

background forest. Four binary pictures ensue with tabulated values of D_B and Λ for the respective image and region.

The proposed methodology of analysis formed part of an exercise to produce an effective camouflage textile for military use. Many samples were tested in several operating environments. Can the method provide a reliable assessment of the effectiveness of the camouflage materials?

The example given in Figures 3 and 4 shows a situation where the camouflage pattern is not fully effective, with only two of the four colours matching the background environment. Figures 5 and 6 show a material that was developed after many analyses and several iterations to arrive at a 'fractal' pattern of the appropriate combination of colour to match a tropical forest environment better than any previous materials attempted. Its effectiveness can be seen visually, as well as verified from the results obtained through the analysis.

Figure 3: Colour photograph of a camouflage textile against the background forest. This material was made with generally lighter colours.
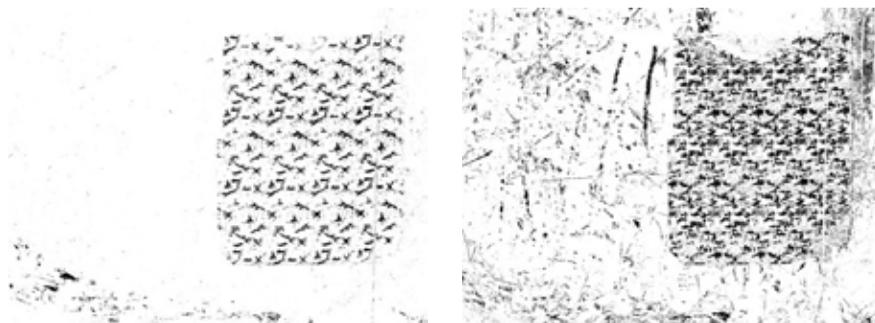
	Black		Brown	
	Background	**Textile**	**Background**	**Textile**
D_B	1.06 ± 0.20	1.57 ± 0.09	1.54 ± 0.10	1.73 ± 0.06
Λ	29.45 ± 0.01	0.70 ± 0.09	1.37 ± 0.03	0.36 ± 0.24

	Green		Sand	
	Background	**Textile**	**Background**	**Textile**
D_B	1.51 ± 0.10	1.50 ± 0.11	1.18 ± 0.09	1.80 ± 0.06
Λ	2.49 ± 0.02	0.84 ± 0.05	7.48 ± 0.01	0.41 ± 0.21
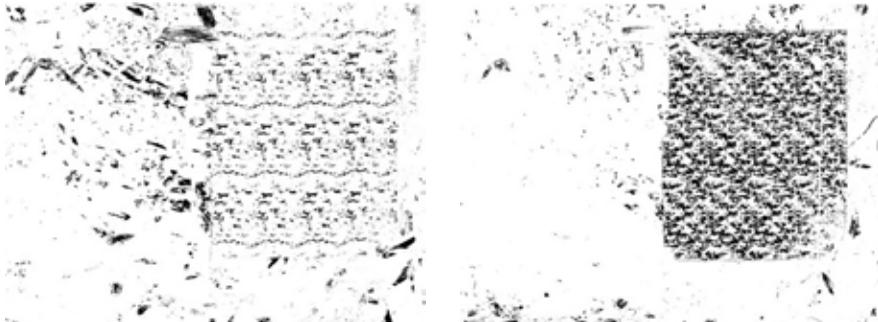
Figure 4: Results of box count fractal analysis performed on the textile shown in Figure 3. It can be seen that this textile has fairly close match with the background for green and brown, but not for black and sand.

Figure 5: An experimental camouflage textile that was developed through extensive study and previous iterations. Visual matching between the textile and environment can be seen here.
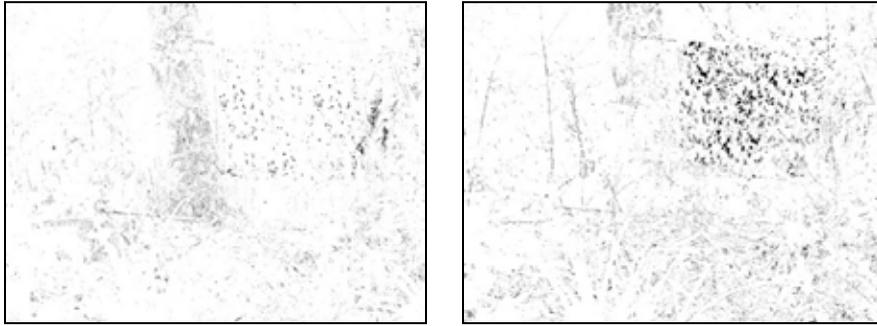
	Black		Brown	
	Background	**Textile**	**Background**	**Textile**
D_B	1.42 + 0.17	1.29 + 0.15	1.45 + 0.16	1.60 + 0.08
Λ	1.81 + 0.03	2.73 + 0.02	1.79 + 0.02	0.80 + 0.07

	Green		Sand	
	Background	**Textile**	**Background**	**Textile**
D_B	1.71 + 0.09	1.75 + 0.05	1.59 + 0.13	1.71 + 0.07
Λ	1.04 + 0.03	0.49 + 0.08	0.70 + 0.007	0.55 + 0.09
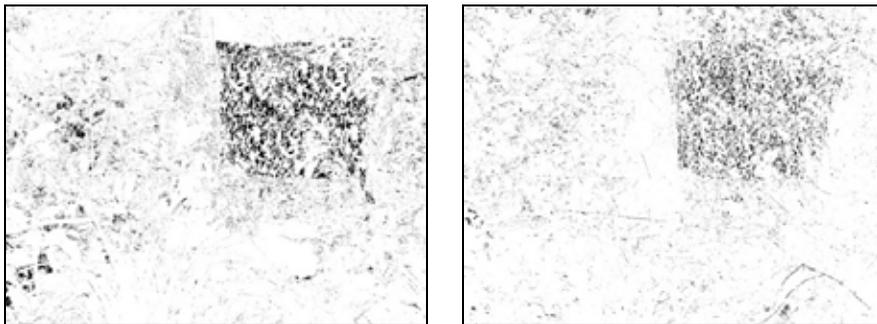
Figure 6: Box count fractal analysis performed on the textile shown in Figure 5 shows close matches of fractal parameters for all four colours used on the textile.

CONCLUSION

This paper has demonstrated that fractal analysis in the form of box counting, yielding values of fractal dimension and lacunarity, can be applied effectively to evaluate military camouflage patterns on textiles. For the effective implementation of the proposed method, a colour-accurate image needs to be produced first, followed by the application of an appropriate image analysis routine to select features of interest. This method has enabled the design of an effective camouflage material to be used in a tropical forest environment. It negates the need for guesswork and subjective human visual assessment for camouflage effectiveness.

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LEADERSHIP STYLES OF MILITARY COMMANDERS IN THE MALAYSIAN INFANTRY

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ABSTRACT

Study on leadership has always been a keen interest in any organization as it contributes to leading employees towards achieving goals set by the organization. In the military, leadership is crucial as military commanders need to lead their men in military missions. The success in combat and smooth running of an organization depends on the leadership role portrayed by military commanders of a unit. This paper aims to examine the leadership styles among military commanders in the infantry regiment. A quantitative approach was taken to determine empirically the leadership styles among military commanders, specifically in the Malaysian Infantry. The finding indicates that the highest mean score on leadership style was for transactional followed by transformational and laissez-faire among the current military commanders in the Malaysian infantry. However, a closer analysis illustrates some significant difference among military commander's leadership style between regiments in the Malaysian Infantry. The finding implies that although all military commanders undergo similar training, there are differences in leadership style portrayed by military commanders between regiments in the Malaysian Infantry. The paper will be able to contribute an understanding in leadership practices among military commanders in the Malaysian Infantry. In addition, the study also expands literature that both transactional and transformational leadership styles are common in combat units.

Keywords: Leadership, military commanders, malaysian infantry, transactional leadership, transformational leadership, laissez-faire leadership.

INTRODUCTION

Leadership has always been an important factor in most organizations as it contributes to influencing and directing employees towards accomplishing organizational goals. In the military, a military commander plays a pertinent leadership responsibility in moving his subordinates and organization to be in a state of combat readiness set by the military hierarchy. The effective role of leadership lies on how a leader is able to adapt and lead his men in a constant changing environment. Leadership can be defined in a variety of ways depending on which perspective it is taken. From an academic point of view, some leadership is defined as "inducing followers to act for certain goals that represent the values and the motivations of wants and needs, the aspiration and expectations of both leaders and followers [1]. Roger [2] defines leadership as a collective function expressed

in an integrated form of the group's effort and not the sum of individual dominances and contribution reflected as their relationship. Lussier and Achua[3] defined leadership as the influencing process of leaders and followers to achieve organizational objectives through change. Hollander and Offerman[4] view leadership as a two-way influencing relationship aimed at achieving mutual goals of the leader and the follower.

Kotter[5] argues that leadership is more concerned in providing direction, aligning people, motivating and inspiring others that emphasizes on long-term outcomes and organizational goals where effort should be focused on discovering solutions, managing change and inspiring individuals to achieve their goals. Gharehbaghi and McManus [6] view leadership as achieving objectives through energized subordinates who share their passion, vision and direction. McCuen[7] asserts that leadership consists of knowledge and skills possessed by an individual who is employed to persuade others to achieve the objective set by the leader. On a different note, Erkutlu[8] defines leadership as a process of social influence as it involves establishing organization's or group's objective and encouraging their behavior towards these objectives [9].

Military leaders define leadership as "the capacity and will to rally men and women to a common purpose and the character which inspires confidence [10]. Field Marshall Slim [11] defines it as a combination of persuasion and example that makes other people do what you want them to do. According to several researchers,leadership studies have taken a variety of approaches which includes leader traits, behaviors and the influence of situational characteristics on leader's effectiveness [12] and recently on the identity of a leader where the understanding of leadership identity may develop the role of leadership [13,14,15]. Having examined the various definitions of leadership, this study defines leadership as the ability to lead subordinates and inspires them towards organizational goals.

Specifically in the Malaysian Infantry, the Malaysian soldiers have displayed high spirit, comradeship and desire to fight against the communist in defending their country during the Malayan emergency [16,17]. Soldiers were highly motivated and willing to sacrifice their lives in performing their military tasks against the communist insurgents [18]. With the laying down of arms by the communist insurgents in 1989, the Malaysian Infantry is still responsible in safeguarding the nation's sovereignty that requires the same spirit, comradeship and willingness to perform their military role but in a different environment. It is also important to note that the success in a military mission lies on the leadership of military commanders [19].As leadership is an essential factor in the military and empirical studies on leadership are limited in the Malaysian Infantry, this paper intends to examine the leadership styles among military commanders in their role of human resource management.

LITERATURE REVIEW

In the era of complexity and uncertainty, organizations need leaders who are adaptive, reactive and flexible to assist followers in managing the challenging environment. In relation

to managing human resource, Robbins [20] concludes that people increase productivity based on the notion that organizations must treat their employees as people and want to make them comfortable. People need to be satisfied and motivated to perform effectively and this indicates that leadership must include these perspectives to ensure organizational performance. The study in leadership style examined transactional, transformational and laissez-faire leadership styles recognized by Bass and Avolio[21].

Firstly, transformational leadership which is based on the achievement of the leader rather than the leader's personal characteristics and follower's reaction [3] and gets things done by influencing people to change. Transformational leadership is based on the work of Burns [22] and was expanded by Bass [23]. However, further studies by Avolio[24] and Antonakis[25] established four distinct components of transformational leadership, which are; 1) *Idealized influence* where leaders are admired, respected and trusted. Followers would want to emulate their leader. In this type, leader earns reputation from his or her followers by considering their needs above his or her needs. The leader shares risk with followers and is consistent in conduct with ethics, principles and values; 2) *Inspirational motivation* where leaders behave in a manner that motivates those around them by encouraging them in their work. The followers are highly spirited, enthusiastic and optimistic state of mind. The leader encourages followers to visualize an attractive future which is obtainable by them; 3) *Intellectual stimulation* where leaders stimulate their followers to be innovative and creative by questioning assumptions, reframing problems and approaching old situations in new ways. Follower's ideas and creativeness are accepted in the process of managing problems and finding solutions; 4) *Individual consideration* where leaders are attentive to individual need for their personal enhancement and developed to achieve higher state of individual potential. Learning opportunities are also created and individual differences in needs and desires are recognized. Transformational leadership defines the role of the leader and follower clearly and includes the followers in the leadership process. This style also acknowledges that the leader provides the primary means for change in an organization. In other words, it is a set of behaviors that leads the change process [26].

Secondly, transactional leadership that is often referred to as a process of social exchange or giving something to followers in exchange for effective performance [23]. It is equivalent to the old method of "dangling a carrot on a stick", that employs established goals and clarification of roles and task requirements [20]. Transactional leadership is associated to day-to-day management functions, where external demands require minimal need for adjustment in performance. This leadership style takes a managerial focus in which leaders emphasize on getting the job done effectively. It builds on the foundation for relationships between leaders and followers because it is based on expectations and responsibilities. Transactional leadership is classified by two major leadership strategies; 1) *Contingent rewards* where the emphasis is on the use of reward or praise on achieving expected goals or performance [24]. The rewards may vary from leader recognition to bonuses and salary increases [27]; 2) *Management-by-exception* (active) where the leader constantly monitors follower failure and takes corrective actions. Although this type of leadership would be relevant in high risk situations or in military settings, it is generally leads to low risk culture where employees focus on avoiding errors [21,23,24]. Leaders who

practice Management-by-exception often provide negative feedback because the leader is only seen in contact with subordinates when failures occur. This form of leadership style does not foster a good relationship or growth among the leader and follower. In Management-by-exception environment, an ad hoc situation requires the intervention of the leader because followers are not given the autonomy to solve a problem and lose the opportunity to learn from experience [23]. Bureaucratic authority and legitimacy are also part of transactional leadership [28] as it applies standards, compliance and dependence on reward and punishment to influence performance. A positive outlook of transactional leadership is that objectives and goals are clearly defined within the structured environment,whilerewards and punishment are the driving factors for compliance. However, a major weakness in this style is that relationship between leader and follower are short term and are emphasized by task. Thirdly, laissez-faire style which according to Lewin and Lippit[29] removes responsibility from the leader to the group. This type of leadership style enables followers to take initiative to solve problems without the leader's interference. Empowerment and delegation of work is highly a practice in this form of leadership style. Here, the followers are assumed to have the required knowledge and experience to have autonomy in their decision making. On the other hand, Laissez-faire method may also cause delay in actions and ineffective if the followers are not responsible or have the sense of urgency in executing the task at hand [30].

Leadership takes a similar approach in the military, where the essence of leadership is the art of influencing others to accomplish a task or mission. Leadership in the military context has always associated combat performance to morale, unity and esprit corp as the World War II, Vietnam War or the Korean War often verifies that a high level of cohesion, esprit corp and morale are the key characteristics in the best performing military unit [31]. According to Kane and Tremble [32] and Shamir et al [33], even in peacetime, leadership is associated with cohesion and collective commitment to the organizational values and goals. It requires an effective leadership role to influence, motivate and inspire individuals to achieve the desired outcome. Bass [28] and Gal [34] identifies that the critical elements of a unit in military engagement are leadership, morale and commitment. Shamir et al [33] also reports that among the Israeli Defence force companies, unit morale and cohesiveness correlate to the trust of the unit's leadership and the willingness to sacrifice for the leader.

The Malaysian Army Command and Leadership doctrine [35] characterizes military leadership as being pushed into leadership roles by virtue of their appointment in positional authority. The military commander is primarily held responsible for the success of a mission even if he or she has to work with subordinates or group that is not his or her choice. The approaches to leadership styles in the said military doctrine classifies leadership into three main styles; 1) directing leadership style that provides the detailed information of how, when, who, where and what the task to be performed without taking into consideration the subordinates view. This style monitors the progress the task because the subordinates are assumed to have little knowledge, skill or experience in performing the required task; 2) participating leadership style is one where both the leader and the subordinates work together as a team to accomplish the task. In this style, subordinates are expected to provide views and suggestions in making the decision to implement the

task. This style is best suited in an environment where time is not a factor and subordinates are sufficiently able to conduct the task; 3) delegating leadership style which involves providing the subordinates the leeway in solving a problem or executing a task without the leader's interference. This environment creates an avenue for learning where leaders and subordinates have the opportunity to share knowledge and experience. In other words, the three described approaches depict similarity to transactional, transformational and laissez-faire leadership styles [21].

Hater and Bass [36] find transformational leaders are able to promote higher level of motivation among their subordinates. Bass and Riggio[37] and Trottieret al [38] studies illustrate that transformational leaders are able to motivate their subordinates by articulating a vision and subsequently empowering them towards that vision. Although transformational leadership seem to be more common in the higher level of command in the US Army [32], Black [39] study indicate a combination of transformational and transactional leadership styles among the US Air Force commanders. Between the two leadership styles, transformational leadership tends to illustrate more positive acceptance from the subordinates [39]. Since transactional, transformational and laissez-faire leadership styles are commonly studied in the military settings this study examined transactional, transformational and laissez-faire leadership styles among military commanders in the Malaysian Infantry.

ORGANIZATION SETTING

The Malaysian Infantry constitutes of three infantry regiments; the Royal Malay Regiment (RMR), Royal Ranger Regiment (RRR) and the Border Regiment (BR). The Malaysian infantry is the backbone of the Malaysian Army where the prime role is to deny any form of threat or intrusion by land or from the sea. The infantry corp consists of thirty-nine regiments.

METHODS

To identify the leadership style among the military commanders in the Malaysian Infantry, a survey was conducted in which 279 military officers from the Royal Malay Regiment (RMR), Royal Ranger Regiment (RRR) and Border Regiment (BR) participated. The number of respondents was based on Krejcie and Morgan [40] table for determining the sample size where the respondents consist of 177 military officers from the RMR, 64 from RRR and 38 from BR. The respondents were asked to describe the leadership style of their military commanders using the Multifactor Leadership Questionnaire (MLQ) [41] as survey instrument with a Likert scale ranging from 1 (not at all) to 5 (very frequently). This instrument was used because it has been proven to be reliable in examining leadership styles; transactional, transformational and laissez-faire and that its reliability ranges from 0.74 to 0.91 [42]. Transactional leadership scores were obtained by averaging all the scores from the items in contingent reward and management-by-exception while transformational

leadership style were derived from averaging all the scores from the items in idealized influence, inspirational motivation and intellectual consideration. Since Laissez-faire is the only scale measuring non-leadership score, the non-leadership score was equivalent to the Laissez-faire leadership style score.

DATA ANALYSIS AND FINDINGS

A descriptive analysis was conducted where the normality and equity of variance of the leadership scores were met. For reliability, the inter-item correlation matrix did not indicate any negative values and Cronbach's alpha of 0.840 is good internal consistency reliability and within the reliability range reported by Moore and Rudd [42]. All items in the corrected item-total correlation indicate value of more than 0.3, suggesting a high degree correlation between items [43]. As the scale was interval, the mean measure of central tendency was used to determine the leadership style portrayed by military commanders in the Malaysian Infantry. The mean scores including the standard deviation of the seven leadership scales that was measured by MLQ is shown in Table 1. The mean statistic value of the leadership style score illustrate the type of leadership style portrayed by the military commanders in the Malaysian Infantry, where the higher the mean, the higher the leadership style emphasized. Among the seven leadership style scale scores, the highest mean score was reported for Management-by-exception (M = 4.44, SD = 6.54) scale and the lowest mean score was for Laissez-Faire leadership (M = 3.08, SD = .553). From an overall perspective, the current military commanders in the Malaysian Infantry had the highest mean score for Transactional Leadership style (M = 3.71, SD = .666), followed by Transformational Leadership style (M = 3.61, SD = .797) and Laissez-Faire Leadership style (M= 3.08, SD = .553).

Table 1: Mean Scores of Leadership Style (n=279)

	Minimum	Maximum	Mean	Std. Deviation
Transactional Leadership	2	5	**3.71**	0.66
Management-by-exception	3	5	4.44	0.65
Contingent reward	2	5	3.43	0.71
Transformational Leadership	2	5	**3.61**	0.79
Idealized influence	2	5	3.42	0.73
Intellectual stimulation	2	5	3.38	0.68
Individualized consideration	2	5	3.30	0.64
Inspirational motivation	1	5	3.26	0.73
Laissez-Faire Leadership	2	4	**3.08**	0.55

Since both the normality and homogeneity of variance were met, a one-way ANOVA between groups analysis of variance was conducted to examine differences in mean score obtained in leadership style among military commanders between RMR, RRR ad BR. The ANOVA test revealed that there was a statistically significant difference in the mean for transactional leadership style, F (2, 276) = 5.758, p = 0.004 and transformational leadership style, F (2, 276) = 15.922, p = 0.0001 for military commanders between the regiments and not for Laissez-faire leadership style, F (2, 276) = 1.499, p = 0.22, as shown in Table 2.

Table 2: Leadership Style among Military Commanders Between Regiments

ANOVA:

Leadership Style		Sum of Squares	df	Mean Square	F	Sig.
Transactional Leadership	Between Groups	4.94	2	2.47	5.75	.004
	Within Groups	118.53	276	0.42		
	Total	123.48	278			
Transformational Leadership	Between Groups	18.24	2	9.12	15.92	.000
	Within Groups	158.16	276	0.57		
	Total	176.41	278			
Laissez-Faire Leadership Style	Between Groups	0.915	2	0.45	1.49	0.22
	Within Groups	84.18	276	0.30		
	Total	85.10	278			

To determine the significant difference for transactional and transformational leadership styles, the effect size was calculated as shown below. The effect size for transactional leadership style was calculated and eta-squared obtained was η^2 = 0.04, indicating that the mean difference for transactional leadership style of military commanders between the regiments was small (Cohen, 1988).

$$\eta^2 = \frac{SSB}{SST}$$

Where

η^2 = Eta-squared = effect size

SSB = Sum of squared for between groups

SST = Total sum of squared

$\eta^2 = \dfrac{123.848}{4.946}$

$\eta^2 = \quad 0.04$

Tukey HSD Post Hoc multiple comparisons test indicates that there was a statistically significance difference in the mean of transactional leadership style of military commanders between the regiments for the following pair; RMR ($M = 3.61$, $SD = 0.665$) and the RRR ($M = 3.92$, $SD = 0.650$) because the mean difference was large, $MD = 0.310$ and the p value obtained was 0.004, which is smaller than alpha value of 0.05. On the other hand, there was no statistically significance difference between RMR ($M = 3.61$, $SD = 0.665$) and BR ($M = 3.81$, $SD = 0.616$) because the mean difference, $MD = 0.198$ was small and the p value obtained was 0.216, which is greater than alpha value of 0.05. There was no statistically significance difference between the RRR ($M = 3.92$, $SD = 0.650$) and the BR ($M = 3.81$, $SD = 0.616$) because the mean difference, $MD = 0.111$ was small and the p value obtained was .135, which is greater than alpha value of 0.05.

The effect size for transformational leadership style was calculated and eta-squared obtained was $\eta^2 = 0.103$, indicating that the mean difference for transformational leadership style of military commanders between the regimentswas large [44].

$\eta^2 = \quad \dfrac{176.416}{18.249}$

$\eta^2 = \quad 0.103$

For transformational leadership style, the result indicates that there was a statistically significance difference in the mean of transformational leadership style of military commanders between the regiments for the following pairs; RMR ($M = 3.61$, $SD = 0.665$) and BR ($M = 3.81$, $SD = 0.616$) because the mean difference, $MD = 0.696$ was large and the p value obtained was 0.000 which is smaller than alpha value of 0.05, and between RRR ($M = 3.92$, $SD = 0.650$) and the BR ($M = 3.81$, $SD = 0.616$) because the mean difference, $MD = 0.840$ was large and the p value obtained was 0.0001 which is smaller than alpha value of 0.05. There was no statistically significance difference between the RMR ($M = 3.61$, $SD = 0.665$) and RRR ($M = 3.92$, $SD = 0.650$) because the mean difference, $MD = 0.144$ was small and the p value obtained was .394, which is greater than alpha value of 0.05. While for laissez-faire leadership style, there was no statistically significance difference among the regiments, RMR, RRR and BR.

DISCUSSION

The findings of this study indicate a combination of transactional and transformational being practiced by military commanders in the Malaysian Infantry. However, laissez-faire leadership style is least practiced. Based on the mean score for transactional leadership, the findings show that military commanders in RMR has lower mean score than in RRR and BR, indicating that transactional leadership among RRR and BR is higher than in RMR. However, a closer examination using a one-way ANOVA for any difference in transactional leadership among military commanders indicates

no significant difference between RMR and BR; and between RRR and BR. Since the effect size was small based on Cohen [44] criteria, the study concludes that transactional leadership was commonly practiced by military commanders in the three regiments.

The mean score for transformational leadership show that military commanders in BR has a lower mean score than in RMR and RRR, indicating that transformational leadership among RMR and RRR military commanders is higher than in BR. However, a one-way ANOVA analysis for any difference indicated a significant difference between military commanders in RMR and BR; and between RRR and BR but no significant difference between RMR and RRR. Since the effect size was large based on Cohen [44] criteria, the study concludes that military commanders in RMR and RRR engaged in transformational leadership more than in BR. There was no significant difference for laissez-faire leadership style among military commanders in the three regiments as the *p* value was greater than .05. As the findings illustrate both transactional and transformational leadership styles are commonly practiced by military commanders in the Malaysian Infantry, it is consistent with literature findings of Manheim and Halamish[45], Dvir et al [46], Goldberg-Weil [47] and Moore and Rudd [42] that found both transactional and transformational leadership styles were common in combat units. The finding is also consistent with Parry and Proctor-Thompson [48] and Bass et al [37] that both transactional and transformational leadership styles were effectively used in organizations.

CONCLUSION

In summary, the results empirically illustrate that while transactional leadership is commonly portrayed among military commanders in the three regiments; transformational leadership is more prevalent among military commanders in RMR and RRR than in BR in the Malaysian Infantry. Since studies on leadership in the Malaysian Infantry are limited, this study provides a fundamental understanding in leadership practices among military commanders in their role of human resource management.

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