

Known Knowns and Known Unknowns: Measuring Myanmar's Military Capabilities¹

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As then US Defense Secretary Donald Rumsfeld stated in characteristic fashion, some security issues are easily researched and well understood, while others pose greater problems. Failure to recognize these “known knowns” and “known unknowns”, or to acknowledge information gaps, can lead to misconceptions and errors of judgement. There are also mysteries — the “unknown unknowns”. The study of Myanmar's armed forces (or Tatmadaw) is a case in point, yet anyone attempting to study them faces problems at three levels. At the first are the traps lying in wait for all who engage in such intellectual exercises, and strive for precision, balance and objectivity. At the second level are the challenges inherent in the study of any country's military capabilities. At the third level are the difficulties encountered by anyone studying modern Myanmar. Due mainly to the lack of reliable data, however, an accurate, detailed and nuanced assessment of Myanmar's military capabilities is currently impossible. It is difficult even to make judgements about its order of battle and defence expenditure, let alone the Tatmadaw's combat proficiency. Yet these kinds of issues are critical to an understanding of Myanmar's security.

Key words: Myanmar, Tatmadaw, military capabilities, defence budget, order of battle.

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Reports that say that something hasn't happened are always interesting to me, because as we know, there are known knowns; there are things we know we know. We also know there are known unknowns; that is to say there are some things we do not know. But there are also unknown unknowns — the ones we don't know we don't know.

US Defense Secretary Donald Rumsfeld
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Since they were made in 2002, Donald Rumsfeld's comments about "known knowns", "known unknowns" and "unknown unknowns" have been lampooned in the news media and on the Internet.² Yet, in his own inimitable fashion, the then US Secretary of Defense was making a valid point. Intelligence agencies, strategic think-tanks and independent analysts have long known that some security issues are quickly recognized, easily researched and well understood, while others pose much greater challenges. There is rarely enough reliable data to answer all possible questions, or to permit the elimination of alternative interpretations. In addition, there will always be matters about which observers remain completely unaware.

These problems assume many guises, but they immediately become apparent when attempting to make comprehensive assessments of national military capabilities. For, in professional hands, this is a very demanding analytical exercise that goes well beyond the simple lists of equipment and broad generalizations about a country's defence posture that periodically appear in popular journals.

The study of Myanmar's armed forces (or Tatmadaw) is a case in point. Since General Ne Win's coup d'état in 1962, observers of the country (formerly known as Burma) have monitored public events, commented on certain developments and pondered observable trends. Defence Attaches in Yangon (formerly Rangoon) have followed changes in the military hierarchy and noted arms acquisitions. To the extent that these issues have been understood, they can be considered "known knowns". Increased efforts to research the Tatmadaw since the abortive 1988 pro-democracy uprising, however, have exposed a dearth of reliable information. More is available now than in the past but there is still a large number of "known unknowns". Also, Myanmar has its share of mysteries, and its armed forces continue to surprise observers, reflecting the many "unknown unknowns".

These information gaps have not dissuaded popular pundits and other commentators from making bold pronouncements about the

larger, better equipped Tatmadaw which has emerged in Myanmar over the past twenty years. Most have claimed “inside knowledge” and unique insights. Whether or not these claims can be justified, it remains the case that a detailed, accurate and nuanced assessment of Myanmar’s military capabilities — of the kind routinely demanded by governments, defence forces and strategic think-tanks — is simply impossible to achieve. It is difficult even to make confident judgements about the Tatmadaw’s basic order of battle and Myanmar’s annual defence expenditure. Nor is it possible to gauge the Tatmadaw’s combat proficiency.

As a result of these and other problems, the picture of the Tatmadaw gained from contemporary sources is often inaccurate, incomplete or lacking in nuance. There has been a tendency to accept unverified reports as facts, and to draw broad conclusions from fragmentary and anecdotal evidence. At times, closely reasoned analysis and cautious commentary has been crowded out by speculation or politically biased assertion. Even academic observers normally aware of the pitfalls inherent in the analysis of armed forces have fallen into the traps of equating the acquisition of new weapon systems with the development of new combat skills, and assuming that an expanded order of battle means increased military capabilities.

These problems have helped create a number of myths and misconceptions. Indeed, by surveying works produced on this subject since 1988, it is possible to gain two different impressions of the modern Tatmadaw. At one extreme, it is portrayed as an enormous, well resourced and efficient military machine that completely dominates Myanmar and threatens regional stability. At the other extreme, it is characterized as a lumbering behemoth, lacking professional skills, riven by internal tensions and preoccupied with the maintenance of political power. The truth about the Tatmadaw lies somewhere between these two extremes but without hard, independently verifiable evidence, determining the precise point is very difficult.

Anyone attempting an assessment of Myanmar’s military capabilities faces a range of analytical problems, at three distinct levels. At the first level are the personal and professional challenges faced by all those who engage in intellectual exercises of this kind, and who strive for precision, balance and objectivity. At the second level are the myriad difficulties inherent in any serious study of military capability. At the third level are the many problems encountered when conducting research on modern Myanmar. If all three are taken into account, the resulting assessment will still be incomplete but it can claim to be based on rigorous analysis, and

thus publicly defensible. It will also provide insights into the state of the Tatmadaw and the Myanmar government's security policies.

The Imperfect Analyst

The challenges facing strategic analysts in intelligence agencies, academic institutions and think-tanks are already widely known. The controversies over the September 11, 2001 terrorist attacks and the 2003 invasion of Iraq thrust such issues into the world's headlines, but well before then they were the subject of lively debates among professionals and independent commentators.³ This is not the place for a discussion of esoteric questions relating to the nature of scholarly enquiry, objective empiricism or analytical tradecraft. Suffice it to say that any attempt to make a comprehensive assessment of military capability — regardless of the country targeted, or the nature of the institution or person initiating the study — will be affected by such issues, to a greater or lesser degree.

For example, it has long been recognized that analysts approach these kinds of projects with certain personal views, political inclinations and cognitive predispositions. They may try to set aside such influences, in order to deliver an accurate and balanced result, but such factors are still likely to affect the way the research question is framed, which methodology is employed and how the findings are presented. Lawrence Freedman has also cautioned that it is unrealistic to expect analysts completely to divorce themselves from their social and cultural milieu. Indeed, to avoid what he calls a “paralysing eclecticism”, they need to have a conceptual framework in which to situate their judgements.⁴ Even so, analysts need to be aware that they have unconscious biases or deeply embedded preconceptions, which can colour their treatment of an issue.

In Myanmar's case, some scholars and journalists — and most activists — have eschewed the ideal of objective, value-free analysis and allowed their political or personal views to influence their work. Since 1988, this has led to numerous publications that consciously aim to persuade as well as to inform.⁵ Some are unashamedly policy prescriptive. This is a perfectly valid approach, provided that these products are acknowledged to constitute policy advice or advocacy, rather than unbiased journalism, objective academic enquiry or intelligence analysis. If the goal is a politically neutral, empirical assessment of Myanmar's military capabilities, however, then analysts are obliged to resist the temptation to let their own private philosophies and social agendas influence their judgement.

There is also the problem known as “group think”. There are often subtle but strong pressures on analysts and commentators to share the conventional wisdom, and to express views that conform to those of the majority — or the most powerful.⁶ Since 1988, for example, an informal coalition of politicians, human rights campaigners and expatriate groups have attempted to dominate discussions of Myanmar in the news media and on Internet sites. They have effectively painted a stark picture of the military government and armed forces that has informed both public opinion and official policy. Attempts to challenge this “new orthodoxy” have usually provoked a harsh response. This has inhibited open debate on a number of important issues.⁷

Another challenge faced by analysts is “mirror-imaging”. This is the assumption that “other leaders, states, and groups share motivations or goals similar to those most familiar to the analyst”.⁸ There is a need to develop an appreciation of different perceptions, different motivations and different rationales. For example, Myanmar’s military leaders view the world differently from the governments of many other countries, and perceive Myanmar’s vital security interests in ways not even shared by many of their fellow citizens. It has been argued that, by failing to take this into account, Western policy-makers have committed serious errors of judgement.⁹ As Herb Meyer has observed, figuring out how governments and national leaders think — their “mindset” — is one of the toughest questions to ask analysts, but it is one of the most essential.¹⁰

Conversely, there is the danger of analysts going to the opposite extreme, and seeing a government or military institution as so foreign that the customary rules of intellectual enquiry are suspended. The fact that Myanmar is in many ways an exotic place has led some commentators to use criteria they would not apply to more familiar countries. For example, the popularity of astrology, numerology and *nat* (spirit) worship in Myanmar does not mean that the Tatmadaw’s officer corps is dangerously superstitious and prone to irrational behaviour.¹¹ Also, reports of Myanmar’s poverty, rural economy and failed education system does not mean that Myanmar’s armed forces consist largely of ignorant peasants.¹² Yet such caricatures periodically appear in the news media and on websites.

These sorts of problems usually arise through political bias, a lack of emotional detachment or simply weak analytical technique. However, they can reflect other failings. For example, some comments made about Myanmar’s armed forces since 1988 have smacked of arrogance on the part of observers from richer and technologically

more advanced countries. Occasionally, the rather dismissive attitude shown towards the Tatmadaw has been reminiscent of the thinly disguised racism found before the Second World War, when foreign analysts of Japan's armed forces questioned their ability to use modern weapon systems and prevail against more "civilised" countries.¹³ Whether it is by foreigners referring to Myanmar, or the other way around, there is no intellectual basis for the adoption of stereotypes.

Clearly, the challenges faced by strategic analysts and other researchers need to be kept in perspective. Not all publications about the Tatmadaw suffer from all the weaknesses identified above. Indeed, there are many reports and commentaries that observe high standards and make major contributions to the open literature on modern Myanmar. Also, not everyone is interested in producing the kind of in-depth capability studies that are the usual fare of strategic think-tanks and intelligence agencies. Even so, it is important to recognize that Myanmar-watchers are only human, and as such are potential victims of the many traps that lie in wait for unwary analysts.

Measuring Military Capabilities

In addition to the personal and professional challenges faced by analysts studying Myanmar's armed forces, there is another completely different set of problems surrounding the assessment of military capabilities. These too have long defied easy solutions.

There is no agreed definition of "military capability". Indeed, this term is often used interchangeably with "military strength". Strictly speaking, however, military strength is a quantitative measure that relates to the size of armed forces and their arms inventories. The term "military capability" is more properly used for qualitative assessments which go well beyond basic orders of battle to encompass a wider range of factors — such as defence budgets, technological levels, professional skills, combat proficiency, sustainability and morale. Some definitions are even broader. For example, one Australian study defines military capability simply as "the ability to achieve a desired effect in a specific operating environment".¹⁴

States and armed forces have long attempted to measure the military capabilities of their adversaries and anticipate their strategic thinking.¹⁵ Such efforts can be traced back to the dawn of history, but the practice took a major step forward in the nineteenth century with the development of defence intelligence departments and the

appointment of military attaches. Since then, vast bureaucracies have grown, dedicated to the analysis of foreign armed forces. In addition, independent organizations, academic institutions and publishing houses produce their own estimates of military strength, and ponder the balance of world power. As Philip Towle has observed, “there are probably more people concerned with such problems today than in all the rest of men’s history put together”.¹⁶

There have been numerous attempts to devise templates for the measurement of military capabilities. The most rudimentary are field charts to record enemy orders of battle.¹⁷ Other formulae are more elaborate. Some include complex algorithms and modelling applications to measure combat effectiveness. In 2000, the RAND Corporation devised an approach encompassing a series of qualitative judgements, including the ability to undertake specified combat operations. By adding components like the national economy, political leadership and foreign support, it also attempted to measure military capability as a factor in national power.¹⁸ This was on the basis that “military power expresses and implements the power of the state in a variety of ways within and beyond the state borders, and is also one of the instruments with which political power is originally created and made permanent”.¹⁹

Whatever approach is taken, there is no simple way to measure a country’s armed forces and make judgements about their likely performance. There are so many independent variables governing the creation, development, deployment and commitment of armed forces, that no single method can be considered definitive. In addition, regardless of how well a country’s military capabilities might be assessed, it is still extraordinarily difficult to predict how those forces might fare during a conflict. For, as Carl von Clausewitz wrote, “war is the province of uncertainty”.²⁰ Regardless of how well structured, armed, trained, deployed and led armed forces might be, there will always be a host of unforeseen — and unforeseeable — factors that will affect the outcome of a battle, or a war.

Most descriptions of armed forces concentrate on their order of battle — their size, basic structure and weapons inventory. Some publications go a little further and include descriptions of defence expenditures and manpower resources. A few mention paramilitary forces.²¹ Despite its limitations, quantitative data of this kind can provide a useful picture of military strength and permit simple comparisons between the armed forces of different countries. It does not give an in-depth understanding of a country’s military capabilities, which require much more comprehensive qualitative

assessments. For, as Angelo Codevilla has written, “good Order of Battle books are naturally the beginning of military analysis rather than its end”.²² Yet to go further requires much more information and, usually, a major investment in resources.

Assessments of military capability are one of the core functions of defence intelligence agencies. At the strategic level, they seek to understand national threat perceptions, defence policies and foreign military relations. They also attempt to calculate countries’ abilities to support their armed forces, both in peace and war. Attention is thus given to issues like defence budgets, defence industries and recruitment bases. Increasingly, there is a focus on technological skills and the scope for scientific innovation. At the operational and tactical levels, intelligence officers focus more on the strength and disposition of individual units, their missions, weapons holdings and tactics.²³ At all levels, judgements need to be made about issues like logistics, training, leadership and morale, which are crucial components of combat performance.

Despite all these efforts, and the technological advances that have assisted in this process, the assessment of military capability is still an imperfect art. History provides numerous examples of countries failing accurately to gauge the strategic intentions or military capabilities of their adversaries. Often, these failures have arisen due to a lack of reliable data, but there have also been some notable failures of analysis.²⁴ Yet, the importance attached to this activity is such that governments, think-tanks and independent observers still routinely attempt to gather information and make assessments about the capabilities of foreign armed forces.

These assessments serve many purposes. They help provide governments with warning of military threats. Also, by illuminating the current and potential capabilities of other countries — adversaries and allies alike — they support long range planning and assist in the development of national defence forces. They can inform the acquisition of new weapon systems and the pursuit of new skills. Capability assessments serve as raw material for analyses of a foreign country’s own threat perceptions and security policies. A nuanced understanding of military capabilities can also provide insights into the wider strategic environment, and alert policy-makers to the potential for miscalculation and conflict. For, as Geoffrey Blainey has written, “wars usually begin when the fighting nations disagree on their relative strength”.²⁵

Whatever country is chosen, the assessment of national military capabilities poses a number of daunting challenges. If the chosen

subject is Myanmar, however, then the analyst faces yet another range of problems.

Researching Myanmar

Before 1988, Burma's armed forces were largely ignored by the academic community. They were also accorded a low priority by official analysts of strategic developments in the Asia-Pacific region. During the 1950s, there were concerns about the spread of insurgent communism in Burma, but after that time its security problems and military capabilities seemed to have little relevance to broader regional or global trends. This situation changed in 1988, when the armed forces crushed a nationwide pro-democracy uprising and took back direct political power. Since then, the Tatmadaw has attracted greater attention from scholars, journalists and, it can be assumed, foreign governments.

Over the past two decades, few studies of Myanmar have failed to include some treatment of the armed forces. Most of them, however, have focused on the Tatmadaw's dominant political role and long record of human rights violations. Works on Myanmar's troubled economy have referred to the allocation of vast resources to the military sector, and the direct involvement of the armed forces in various state and non-state enterprises. Most of these publications have referred to the regime's military expansion and modernization programme, launched in 1989. Yet none of these works have described the armed forces in any depth, let alone made substantive comment on their military capabilities.

A small number of publications have been devoted to the Tatmadaw as a military institution. Some have taken an historical approach.²⁶ Others have examined specific issues such as the Tatmadaw's growing professionalism, the internal dynamics of its senior leadership, and the increasing gap between the officer corps and the other ranks.²⁷ One scholar has studied the development of signals intelligence in Myanmar.²⁸ There have also been attempts to determine the Tatmadaw's order of battle.²⁹ Since 2002, however, only two books have attempted to give overviews of the Tatmadaw's development, characteristics and current status.³⁰ They have provided considerable detail, but even these two specialized works were unable to provide a detailed and nuanced assessment of Myanmar's military capabilities.

This lacuna in the scholarly literature seems due mainly to the dearth of reliable data. For, of all the countries in Southeast Asia,

Myanmar is the most enigmatic. Information is scarce, particularly when it relates to national security — a term with a very broad definition in Myanmar. Official statistics cannot be trusted and, while it is possible to glean some useful information from open sources, few foreign analysts speak or read the Myanmar language. Only a few academics have been allowed access to the Tatmadaw's archives. Despite their infinitely greater resources and access to privileged information, even intelligence agencies appear to have trouble obtaining sufficient data about Myanmar's armed forces to formulate detailed capability assessments.³¹

Another problem encountered by researchers is the highly charged atmosphere that has surrounded Myanmar since the 1988 uprising. Most contemporary issues have become highly politicized. For example, there is a large activist community dedicated to the immediate replacement of the military regime with a democratically elected civilian government. Others have seen greater value in "constructively engaging" the regime and seeking reforms over a longer time frame. These two broad camps are bitterly divided. As a result, published material about the Tatmadaw is often coloured by political and "moral" considerations. All this has added to the challenges of separating rumour from reality, and making balanced and objective assessments.

It is with these factors in mind — and the difficulties faced by analysts at the two levels identified earlier — that a closer examination of Myanmar's military capabilities might be undertaken.

Snapshots in the Dark

Simply compiling the Tatmadaw's known — or presumed — order of battle does not provide sufficient information on which to base considered judgements about Myanmar's military capabilities. Nor is it possible in a paper such as this to examine all the analytical criteria listed by institutions like the RAND Corporation. By selecting a number of case studies, however, it is possible to gain some idea of the current state of Myanmar's armed forces, while at the same time illustrating the difficulties encountered in making more comprehensive assessments.

Manpower

Ever since the armed forces took back direct political power in 1988, and launched its ambitious military expansion programme, foreign

observers have tried to determine the number of men and women in the Tatmadaw.³² Numerous estimates have been put forward, but none can be considered definitive.

In 1988, the Tatmadaw probably numbered around 200,000 — 184,029 in the army, 8,065 in the navy and 6,587 in the air force.³³ In 2001, a regime spokesman stated that it numbered “350,000 plus”.³⁴ It is now widely accepted that by 2002 the armed forces had grown in size to around 400,000. This was thought to consist of about 370,000 in the army, 16,000 in the navy and 15,000 in the air force.³⁵ Some sources have claimed that a total of 435,000 is more accurate.³⁶ A few reports have put the figure at 488,000, but this seems to include the 72,000 believed to make up the paramilitary Myanmar Police Force (MPF).³⁷ The anonymous entry for the Tatmadaw on the Wikipedia website gives an active strength of 492,000, but no basis is provided for this claim.³⁸

In 1995, the regime announced a “war establishment” of 500,000. This goal was later revised to 600,000, to take account of the additional units formed since then. This reportedly includes 23,000 in the air force and 22,000 in the navy.³⁹ These figures are purely notional, however, and are well above the Tatmadaw’s current “implemented strength” — although in 1999 one Thai newspaper claimed that there were 620,000 in Myanmar’s armed forces.⁴⁰ Even at about 400,000, the Tatmadaw would be the second largest armed force in Southeast Asia (after Vietnam) and, by some counts, the 12th largest in the world. If the Wikipedia claim is closer to the mark — which is unlikely — it would be the largest in Southeast Asia and the 9th largest in the world.

The 400,000 figure is still widely cited, but in recent years the size of Myanmar’s armed forces appears to have declined, probably to around 350,000.⁴¹ One US academic has claimed that the figure is closer to 300,000, and a few observers believe the figure could be even lower.⁴² These estimates seem to be based on reports of a high rate of desertions, the regime’s difficulties in finding new recruits, and the number of child soldiers.⁴³ In addition, many army units appear to be badly under strength. For example, after 1988 the number of infantry battalions apparently increased from 168 to 504.⁴⁴ At the time, the formal establishment of each battalion was 750, a figure later increased to 826. Yet, in 2006, one source claimed that 220 army battalions were staffed with just 200–300 men, while the remaining 284 battalions each had fewer than 200 personnel.⁴⁵

The difficulty of making sensible estimates of personnel numbers has been exacerbated by corruption, bureaucratic inefficiency and

poor record-keeping. For example, Tatmadaw recruiting stations are known to have falsified their records to win bonuses or to avoid punishment for poor performance.⁴⁶ Unit payrolls have been padded with non-existent personnel in order to skim off funds and resources. Junior officers have reportedly been afraid to report desertions, for fear of retribution. Large numbers of men and children press ganged into military service have apparently deserted.⁴⁷

Given the fact that manpower estimates range from 300,000 to 600,000 — a difference of more than a quarter of a million people — it would take a very bold analyst to claim to know the number of men and women serving in the Tatmadaw. The current estimate of 350,000 is based on reliable sources, but it is unlikely that anyone — possibly even including the members of the country's senior leadership — knows the real size of Myanmar's armed forces.

Defence Budgets

Similar problems surround attempts to calculate Myanmar's annual defence expenditure. Some unofficial estimates have put this as high as 50 per cent of the real budget.⁴⁸ The UK government believes that "at least 30 per cent of Myanmar's gross national product is spent on general defence expenditure".⁴⁹ The US government prefers an estimate of 2.1 per cent of gross domestic product.⁵⁰ Yet it is unlikely that anyone, either in Myanmar or outside it, knows exactly how much Naypyidaw spends on defence each year.

According to official budget figures, Myanmar's allocation to defence has fluctuated considerably over the past twenty years. From 1988, it grew rapidly from about 19 per cent of nominal government spending to a peak of 45 per cent in 1999. It hovered around the 40 per cent level until 2002, then dropped back to around the 32 per cent mark, where it has remained.⁵¹ As a guide to the regime's actual defence outlays, however, these figures are essentially meaningless. Not only is their accuracy questionable, but the budget does not take into account the other, often substantial, off-line accounts controlled by the armed forces. Nor do the budget figures capture all the informal deals involving members of the armed forces, or any of the other activities that contribute to the Tatmadaw's operations.

For example, as the armed forces have grown in size and complexity, so their recurring personnel and maintenance costs have also increased. This has put such a strain on the budget that, during the late 1990s, the Tatmadaw realized it could no longer

sustain a system of centralized logistic support. It declared a policy of self reliance for local military units, which were encouraged to grow their own food and establish commercial enterprises able to raise operating revenues. These activities were halted in 2004, as they were “threatening the institutional unity of the Tatmadaw”.⁵² Commanders have continued to deal on the black market, however, and to coerce supplies from local communities. Among the lower ranks, many military families engage in small scale corruption and private enterprise to supplement their low salaries.⁵³

So diverse and widespread are these informal practices — many of which are likely to be invisible to the regime’s accountants — that it would be impossible even for the military leadership in Naypyidaw to calculate accurately the extent to which the Tatmadaw relies on them for its continued existence. This uncertainty must also affect the reliability of the regime’s formal estimates of expenditure.

Official budget figures are still useful for indicating the regime’s spending priorities. The annual allocation for defence, for example, is more than double that for education and health combined. Even so, the Tatmadaw performs many roles that in other countries would be conducted by civilian agencies. Most senior civil service positions are held by members of the armed forces, and military personnel are found in other uniformed services, such as the MPF. Soldiers are employed in building roads and bridges, and in other ways improving Myanmar’s civil infrastructure. Also, through ventures like the Union of Myanmar Economic Holding Limited and the Myanmar Economic Corporation, the armed forces manage a wide range of commercial enterprises. Thus, budget allocations for “defence” cover a wide range of non-military activities.

All that said, there is wide agreement among analysts that Myanmar spends proportionately more on defence each year than any other country in the Asia-Pacific region. In its 2005 *Yearbook*, the Stockholm International Peace Research Institute ranked Myanmar among the top fifteen military spenders in the world.⁵⁴ The actual figure for annual defence expenditure will always be open to debate but, by any estimation, it is a staggering sum for a country suffering from so many economic and social problems.

Arms Acquisitions

One of the most obvious signs of the regime’s military expansion and modernization programme has been the dramatic increase in its

inventories of weapons platforms, weapons and equipment.⁵⁵ Yet, here again, reliable and detailed information is scarce.

There is little doubt that, since 1988, the Myanmar Army (MA) has taken delivery of tracked and wheeled armoured vehicles, towed and self-propelled artillery pieces, artillery-based and missile-based air defence systems, transport vehicles, communications equipment and small arms. The Myanmar Air Force (MAF) has acquired MiG-29 and F-7 fighters, A-5 and G-4 ground attack aircraft, Y-8 transport aircraft, K-8 trainers, at least three kinds of helicopters, and a variety of electronic systems. For its part, the Myanmar Navy (MN) has reportedly acquired — either by purchase from foreign countries or through an assisted domestic ship-building programme — three corvettes, six guided missile patrol boats, more than a dozen coastal patrol boats and a number of auxiliaries. At least one frigate is currently under construction in local shipyards.

For all the publicity given to these acquisitions, however, it has been difficult to verify reports of particular arms sales. Opportunities for first hand observation are limited. Access to Tatmadaw bases is strictly controlled. Occasionally, new military vehicles have been seen in Myanmar, or crossing the China-Myanmar border, and sometimes military aircraft can be seen at Yangon's Mingaladon International Airport. Public displays — such as parades and exhibits in the Defence Services Museum — can give clues to the Tatmadaw's past and present weapons holdings.⁵⁶ At some risk to themselves, a few current and former members of the Tatmadaw have shared their first hand knowledge with activists and other Myanmar-watchers. Generally speaking, however, researchers have been forced to look elsewhere for data.

Documentary evidence is scarce. There are no official announcements of specific sales, although from time to time fragmentary information appears in Myanmar's state-controlled press. Also, there are occasional reports of arms transfers to Myanmar in the foreign news media. Some appear to be accurate. A few other secondary sources can be helpful. Also, some insurgent and activist groups have compiled orders of battle, drawing on information derived from their own direct experiences, debriefs of MA deserters and prisoners of war, and tactical radio intercepts. Yet these sources are unable to provide details of individual contracts or the operational status of particular weapon systems.

Over the past twenty years, academics, journalists and activists have compiled lists of Myanmar's arms acquisitions, but the results have been mixed.⁵⁷ Few published sources are consistent. Even if

the details of particular arms deliveries become known, it is difficult to state with any confidence the numbers of particular platforms or weapons delivered. All figures cited must be considered estimates only. It is even more difficult to discover the peculiar characteristics of each system — whether it followed factory specifications, or was technically modified before or after sale. Also, it is rarely possible to account for losses, whether on operations, through accidents, or simply due to a lack of spare parts.

Without a reliable order of battle, there is a major gap in the literature on Myanmar's armed forces. As Angelo Codevilla has written, however, "too often military analysis has been reduced to counting men and machines".⁵⁸ The purchase of new arms and equipment is nothing more than a waste of resources if these acquisitions cannot be properly stored, professionally maintained, operated proficiently and employed effectively. For, ultimately, it is not just possession of the hardware which denotes military capability, but what can be done with it.

Combat Proficiency

The RAND Corporation's study measured military proficiency by testing the ability of armed forces to perform a variety of specific combat operations, at different levels and under different conditions. Yet, here again, foreign analysts studying Myanmar's armed forces strike major problems. The lack of hard data, in particular informed judgements about the Tatmadaw's performance by trained military observers, makes such an approach very difficult. Once again, researchers are forced to rely on fragmentary and anecdotal reports of varying reliability.

Before 1988, the Tatmadaw was essentially a lightly armed infantry force, configured for regime protection and the conduct of counter-insurgency operations. The army's heavy equipment was obsolete, its logistics and communications were weak and operations were hampered by a lack of transport, fuel and ammunition. The navy and air force were both small and operated almost entirely in support of the army. Their major weapons and weapons platforms were old and frequently made unserviceable by a lack of spare parts and skilled manpower. Even so, at the time the Tatmadaw was considered by many to be a professional institution. It had been on active service continuously since 1948, and was experienced and battle-hardened.⁵⁹ The budget was tightly controlled, corruption was not a major problem and officers shared many of the same hardships as their men.

On paper, the Tatmadaw now looks much more like a conventional defence force. The MA is still by far the strongest Service, but the MAF and MN have developed into major forces in their own right. All three Services have much larger inventories of arms and equipment, technically capable of performing a much wider range of operations. The Tatmadaw is also distributed more widely across the country, with permanent facilities in places where, before 1988, there was a minimal military presence. In addition, command structures have evolved and the logistical support network has reportedly expanded, to cope with the Tatmadaw's increased size and diversity. It has also begun to develop and practise a range of conventional warfare doctrines.

How well the regime can manage this larger and more complex structure, however, is largely unknown. Also, what military operations the Tatmadaw can conduct, under what conditions, and to what level of proficiency, remains subject to speculation.

The inner workings of the Tatmadaw are almost invisible to foreign observers. Defence Attaches posted to Myanmar are restricted in where they can go and what they can see. They have few opportunities to observe the Tatmadaw in action. A few foreign officers have reportedly been permitted to observe joint training exercises but, if so, they have not shared their impressions. Occasionally, Myanmar hosts visits by foreign warships, senior defence officials, and groups from the defence academies of regional countries, but these visitors appear to see little outside the programme of formal calls and tours of cultural sites. Non-defence visitors to Myanmar and members of the diplomatic corps have even fewer opportunities to make first-hand judgements about the proficiency of the country's armed forces, particularly in combat roles.

Insurgents and foreign adventurers with direct experience fighting the Tatmadaw are in a better position to comment on its proficiency — at least in counter-insurgency warfare — but their reports have been inconsistent.⁶⁰ Some have described well-equipped and well-led MA units which made formidable opponents. Others have reported ill-disciplined and poorly equipped soldiers who needed to be forced into combat with threats and, possibly, drugs. Refugees and humanitarian workers have also been able to shed some light on MA weapons and tactics, including its use of landmines, but again from a limited perspective. Defectors and prisoners of war have provided additional information but, as always with such sources, their testimony needs to be treated with caution.⁶¹

Nor has it been possible to observe the Tatmadaw abroad. Apart from minor forays across its borders, Myanmar has not conducted any foreign military campaigns. A few officers served in United Nations peace-keeping missions in the 1960s and 1970s, but Myanmar has not contributed any combat troops to the UN. The MN participated in an international naval exercise in the Indian Ocean in 2006, its first known foreign deployment for forty-five years, but this rare public exposure did not reveal anything about the navy's combat capabilities. Members of all three Services have undergone training overseas, for example in Yugoslavia, China, India, Pakistan and Russia. Regardless of the calibre of these individuals, however, they may not be representative, and thus cannot be used to make broad judgements about the military capabilities of the armed forces as a whole.

Since 1988, the Tatmadaw's study of modern warfare appears to have influenced its arms acquisitions and the development of new military doctrines.⁶² A number of joint exercises have been held. However, there is no reliable information about the MA's ability to mount large-scale conventional operations, such as territorial defence, ground-based air defence operations or amphibious warfare. Similarly, the MN has been effective against small unarmed fishing vessels, but its ability to conduct anti-surface, anti-air or anti-submarine operations is a closed book. The MAF has acquired a large number of new aircraft since 1988, but how well it can defend Myanmar's sovereign airspace, engage in battlefield air interdiction or mount strategic ground strike operations is simply unknown.

The Tatmadaw is doubtless determined to master its new arms, and develop the capabilities necessary to respond to perceived internal and external threats. Yet, from the evidence available, it seems to be facing a wide range of serious problems. Its rapid expansion and acquisition of so many different weapon systems from so many different countries have apparently contributed to difficulties with doctrine, training, integration, logistics and maintenance. There have been numerous complaints about the arms and equipment purchased from abroad, particularly from China.⁶³ It has been difficult to keep the older platforms serviceable. Also, Myanmar lacks the scientific and industrial base to keep its modernized armed forces operational without external assistance.

More specifically, the MA's weapon systems are well below the technological levels of its most likely adversaries. Some locally made weapons and ammunition are apparently sub-standard.⁶⁴ The MAF suffers from a shortage of skilled pilots, including for the MiG-29

interceptors. Flying hours are restricted, air-to-air combat training is limited and live firings of missiles are rare. This must have an effect on skill levels. The F-7 fighters have a number of weaknesses which makes them highly vulnerable in combat. Also, the air-worthiness of many aircraft is questionable. Most MN vessels are old and many are still fitted with obsolete arms and equipment. Deployments are limited by resource and manpower constraints, again resulting in severe skills shortfalls.

Reports of these and other problems raise serious doubts about Myanmar's combat effectiveness. Even if it can keep its arms functioning, most are vulnerable to counter-measures. In any case, proficiency in their use is unlikely to be good enough for the Tatmadaw to prevail over a trained military force armed with more modern weapon systems. This is even before consideration is given to issues like command and control, communications and intelligence. Intangible factors such as leadership and morale will be critical. There is precious little hard information on which to base firm judgements, but the recent claim that "the Tatmadaw has transformed itself from essentially a counter-insurgency force into a force supported by tanks and artillery, capable of fighting a regular conventional war" must be considered premature.⁶⁵

Conclusion

Since 1988, Myanmar's armed forces have dramatically increased in size and acquired a wide range of new weapon systems. This ambitious expansion and modernization programme has attracted considerable comment, with attention focused mainly on the Tatmadaw's arms acquisitions. Yet, orders of battle on their own are poor measures of military capability. As Michael Herman has stated, "Fairly arbitrary combinations of men and *materiel* are given a declaratory value, justified only because no better units can be suggested."⁶⁶ True military capability assessments depend on qualitative judgements that encompass a much wider range of factors. They also take into account the personal, professional and methodological challenges encountered by all who conduct such intellectual exercises.

Under current circumstances, however, a comprehensive, detailed and nuanced assessment of Myanmar's military capabilities is impossible to achieve. There is simply insufficient reliable data to permit the kind of complex analysis that is required. It is even difficult to answer such basic questions as how many men there are in the Tatmadaw, what budgetary support it receives each year,

and what it has in its armouries. More importantly, analysts are unable to gauge how well the armed forces can maintain and operate their new weapon systems, and perform a wide range of military operations, under different conditions. Indeed, it is doubtful whether Myanmar's own military leaders can make confident judgements about some of these issues.

This problem is not only of concern to strategic think-tanks and intelligence agencies. The lack of an informed assessment of Myanmar's military capabilities inhibits analysis of a range of contemporary issues. Given the nature of the Naypyidaw government, its military capabilities relate directly to its ability to maintain power in the face of popular opposition. They inform judgements about the regime's management of other internal security challenges and its response to perceived external threats. They are also relevant to the regime's foreign policies, including its reactions to the pressures being applied against Myanmar by the international community. Without the necessary data, however, a nuanced understanding of these questions is made much more difficult.

With all these issues in mind, caution needs to be exercised over any assessments of the Tatmadaw that claim to be authoritative. The "known unknowns" vastly outnumber the "known knowns". Most conclusions drawn about the Tatmadaw's military capabilities can only be considered tentative, until more reliable data becomes available. This is not to imply that firm judgements are out of reach entirely, simply that the manifest difficulties of conducting research on Myanmar's armed forces should be recognized and acknowledged. Also, allowance will always need to be made for developments of which observers remain unaware — the "unknown unknowns". To adapt Joseph Nye's formulation, strategic analysts studying Myanmar need to become as familiar with its mysteries, as they have already become with its secrets.⁶⁷

NOTES

- ¹ An earlier version of this article formed part of Andrew Selth, *Burma's Armed Forces: Looking Down the Barrel*, Regional Outlook No. 21 (Brisbane: Griffith Asia Institute, Griffith University, 2009).
- ² "Rum remark wins Rumsfeld an award", *BBC News*, 2 December 2003 <<http://news.bbc.co.uk/2/hi/americas/3254852.stm>>.
- ³ See, for example, Angelo Codevilla, *Informing Statecraft: Intelligence for a New Century* (New York: Free Press, 1992); R.J. Heuer, *Psychology of Intelligence Analysis* (Washington, D.C.: Centre for the Study of Intelligence, 1999); and Rob

Johnston, *Analytic Culture in the US Intelligence Community: An Ethnographic Study* (Washington, D.C.: Centre for the Study of Intelligence, 2005).

- ⁴ Lawrence Freedman, *US Intelligence and the Soviet Strategic Threat* (Houndmills: Macmillan, 1986), p. 184.
- ⁵ A number of scholars have participated in debates over official policy towards Myanmar. One has even argued that it is incumbent upon all those studying Myanmar to become actively “engaged” with the “fear and suffering” of the Myanmar people. See, for example, Monique Skidmore, “Scholarship, Advocacy, and the Politics of Engagement in Burma (Myanmar)”, in *Engaged Observer: Anthropology, Advocacy, and Activism*, edited by Victoria Sanford and Asale Angel-Ajani (New Brunswick: Rutgers University Press, 2006), pp. 42–59.
- ⁶ It has been suggested that this problem is more pronounced in defence intelligence agencies, due to the hierarchical structure of most armed forces. Freedman, *US Intelligence and the Soviet Strategic Threat*, op. cit., p. 21; and W.E. Odom, “Intelligence Analysis”, *Intelligence and National Security* 23, no. 3 (June 2008): 319.
- ⁷ Andrew Selth, *Modern Burma Studies: A View From The Edge*, Working Paper No. 96, Southeast Asia Research Centre, City University of Hong Kong, Hong Kong SAR, November 2007 <http://www.cityu.edu.hk/searc/WP96_07_ASelth.pdf>.
- ⁸ M.M. Lowenthal, *Intelligence: From Secrets to Policy* (Washington, D.C.: CQ Press, 2009), p. 120.
- ⁹ See, for example, M.B. Pedersen, *Promoting Human Rights in Burma: A Critique of Western Sanctions Policy* (Lanham, M.D.: Rowman & Littlefield, 2008), pp. 79–124.
- ¹⁰ Herb Meyer, former Special Assistant to the Director of Central Intelligence, speaking in *Spies R Us: A History of the CIA*, Programme 1: “The Focus of Evil”, BBC Radio Four, 6 February 2003 <http://www.bbc.co.uk/radio4/history/cia_transcript1.pdf>.
- ¹¹ Senior General Than Shwe’s policy decisions are routinely ascribed to supernatural influences, with little attention given to other possible explanations. See, for example, Aung Zaw, “Than Shwe, Voodoo and the Number 11”, *The Irrawaddy*, 25 December 2008 <http://www.irrawaddy.org/print_article.php?art_id=14844>.
- ¹² A large number of senior officers have rural backgrounds, but regulations have been introduced requiring them to earn tertiary degrees before promotion to higher ranks. Maung Aung Myoe, *Building the Tatmadaw: Myanmar Armed Forces Since 1948* (Singapore: Institute of South East Asian Studies, 2009), pp. 199–200. See also Joshua Kurlantzik, “Playing us for fools: Burma’s government is run by a group of ignorant xenophobes. So how come it keeps outsmarting us?”, *The New Republic*, 11 July 2008.
- ¹³ Douglas Ford, “‘The Best Equipped Army in Asia’?: US Military Intelligence and the Imperial Japanese Army before the Pacific War, 1919–1941”, *Journal of Intelligence and Counter Intelligence* 21, no. 1 (2008): 87.
- ¹⁴ Alan Hinge, *Australian Defence Preparedness: Principles, Problems and Prospects: Introducing Repertoire of Missions (ROMINS), a Practical Path to Australian Defence Preparedness* (Canberra: Australian Defence Studies Centre, 2000), p. 15. See also US Department of Defense, *Dictionary of Military Terms* (New York: ARCO, 1988), p. 221.

- ¹⁵ See, for example, John Keegan, *Intelligence in War: Knowledge of the Enemy from Napoleon to Al Qaeda* (London: Hutchinson, 2003).
- ¹⁶ Philip Towle, ed., "Introduction", in *Estimating Foreign Military Power* (London: Croom Helm, 1982), p. 28.
- ¹⁷ See, for example, *The Division in Battle: Intelligence*, Pamphlet No. 9 (Canberra: Australian Army, 1965), Annex C.
- ¹⁸ A.J. Tellis, Janice Bially, Christopher Layne, and Melissa McPherson, *Measuring National Power in the Post-Industrial Age* (Santa Monica, Calif.: RAND, 2000), pp. 132–76.
- ¹⁹ Peter Paret, "Military Power", *The Journal of Military History* 53, no. 3 (July 1989): 240.
- ²⁰ Carl von Clausewitz, *On War*, translated by J.J. Graham (Harmondsworth: Penguin, 1968), p. 140.
- ²¹ The best known of these publications is *The Military Balance*, produced annually by the International Institute of Strategic Studies (IISS) in London. Also, the UK-based Jane's Information Group produces a range of publications that list orders of battle. See, for example, the section on "Myanmar" in the periodical *Jane's Sentinel Security Assessment: Southeast Asia*.
- ²² Codevilla, *Informing Statecraft*, op. cit., p. 422.
- ²³ Strategic intelligence is that required for the formation of policy and military plans at national and international levels. Operational intelligence is that required by commanders for the planning and execution of military operations.
- ²⁴ See, for example, E.R. May, ed., *Knowing One's Enemies: Intelligence Assessment Before Two World Wars* (Princeton, NJ: Princeton University Press, 1986); and R.K. Betts, "Analysis, War, and Decision: Why Intelligence Failures Are Inevitable", *World Politics* 31, no. 1 (October 1978): 61–89.
- ²⁵ Geoffrey Blainey, *The Causes of War* (Melbourne: Sun Books, 1977), p. 122.
- ²⁶ See, for example, M.P. Callahan, *Making Enemies: War and State Building in Burma* (Ithaca, NY: Cornell University Press, 2003).
- ²⁷ See, for example, Tin Maung Maung Than, "Burma: The 'New Professionalism' of the Tatmadaw", in *Military Professionalism in Asia: Conceptual and Empirical Perspectives*, edited by Muthiah Alagappa (Honolulu, HI: East-West Center, 2001), pp. 163–78; Win Min, "Looking Inside the Burmese Military", *Asian Survey* 48, no. 6 (November/December 2008): 1018–37; and M.P. Callahan, "Junta Dreams or Nightmares? Observations of Burma's Military since 1988", *Bulletin of Concerned Asian Scholars* 31, no. 3 (1999): 52–58.
- ²⁸ Desmond Ball, *Burma's Military Secrets: Signals Intelligence (SIGINT) from the Second World War to Civil War and Cyber Warfare* (Bangkok: White Lotus, 1998); and Desmond Ball, *How the Tatmadaw Talks: The Burmese Army's Radio Systems*, Working Paper No. 388 (Canberra: Strategic and Defence Studies Centre, Australian National University, 2004).
- ²⁹ See, for example, Andrew Selth, *Burma's Order of Battle: An Interim Assessment*, Working Paper No. 351 (Canberra: Strategic and Defence Studies Centre, Australian National University, 2000); and *Civil and Military Administrative Echelon of State Peace and Development Council in Burma*, Documentation and Research Department, Network for Democracy and Development, Mae Sot, May 2007.

- ³⁰ Andrew Selth, *Burma's Armed Forces: Power Without Glory* (Norwalk: EastBridge, 2002); and Maung Aung Myoe, *Building the Tatmadaw*, op. cit.
- ³¹ For a rare admission of this fact, see "The Military Capabilities and Limitations", presentation at a conference on "Strategic Rivalries on the Bay of Bengal: The Burma/Myanmar Nexus", Washington, D.C., 1 February 2001.
- ³² The Tatmadaw is overwhelmingly male, the small number of Myanmar women in uniform being restricted to junior medical and administrative positions.
- ³³ Maung Aung Myoe, *Military Doctrine and Strategy in Myanmar: A Historical Perspective*, Working Paper No. 339 (Canberra: Strategic and Defence Studies Centre, Australian National University, 1999), p. 13. See also *The Military Balance 1988-1989* (London: IISS, 1989), pp. 159–60.
- ³⁴ Cited in Maung Aung Myoe, *Building the Tatmadaw*, op. cit., p. 200. See also Barry Wain, "Myanmar Military Growth Worries the Neighbours", *Asian Wall Street Journal*, 22 January 1999.
- ³⁵ Selth, *Burma's Armed Forces*, op. cit., p. 296.
- ³⁶ Andrew Tan, *Force Modernisation Trends in Southeast Asia*, Working Paper No. 59 (Singapore: Institute for Defence and Strategic Studies, 2004).
- ³⁷ A.H. Cordesman and Martin Kleiber, *The Asian Conventional Military Balance in 2006: Overview of Major Asian Powers* (Washington, D.C.: Centre for Strategic and International Studies, 2006), p. 35.
- ³⁸ "Myanmar Armed Forces", Wikipedia <<http://en.wikipedia.org/wiki/Tatmadaw>>.
- ³⁹ Selth, *Burma's Armed Forces*, op. cit., pp. 79–80; and Maung Aung Myoe, *Building the Tatmadaw*, op. cit., pp. 88, 90 and 200.
- ⁴⁰ "Burma Border Situation: Arms Buildup Noted", *Bangkok Daily News*, 31 May 1999.
- ⁴¹ Interviews, Yangon, January 2009.
- ⁴² M.P. Callahan, "Of kyay-zu and kyet-su: the military in 2006", in *Myanmar: The state, community and the environment*, edited by Monique Skidmore and Trevor Wilson (Canberra: ANU Press and Asia Pacific Press, 2007), p. 36.
- ⁴³ *Sold to be Soldiers: The Recruitment and Use of Child Soldiers in Burma* (New York: Human Rights Watch, 2007) <<http://www.hrw.org/en/reports/2007/10/30/sold-be-soldiers>>.
- ⁴⁴ Maung Aung Myoe, *The Tatmadaw in Myanmar Since 1988: An Interim Assessment*, Working Paper No. 342 (Canberra: Strategic and Defence Studies Centre, Australian National University, 1999), p. 13.
- ⁴⁵ Samuel Blyth, "Army conditions leave Myanmar under strength", *Jane's Defence News*, 30 March 2006 <http://www.janes.com/defence/news/jdw/jdw060330_1_n.shtml>. See also Samuel Blythe, "Myanmar army report spotlights morale problems", *Jane's Defence Weekly*, 4 April 2007, p. 14.
- ⁴⁶ Interviews, Yangon, November 1999 and March 2008.
- ⁴⁷ Interviews, Bangkok and Yangon, March 2008 and January 2009.
- ⁴⁸ See, for example, Antonio Graceffo, "Operations Inside Burma: An interview with Free Burma Rangers", *Tales of Asia*, 1 December 2007 <<http://www.talesofasia.com/rs-171-burma.htm>>.

- ⁴⁹ The United Kingdom Parliament, “Burma”, Answer from Mr Fatchett to Mr Rowe, *Hansard*, 22 April 2009 <<http://www.publications.parliament.uk/pa/cm199798/cmhansrd/vo980225/text/80225w07.htm>>.
- ⁵⁰ “Burma”, *CIA Factbook* <<https://www.cia.gov/library/publications/the-world-factbook/print/bm.html>>.
- ⁵¹ *Defence Economic Trends in the Asia Pacific 2007* (Canberra: Defence Intelligence Organisation, 2007), pp. 5–6 <http://www.defence.gov.au/dio/documents/2007_DET.pdf>; and *Defence Economic Trends in the Asia Pacific 1997* (Canberra: Defence Intelligence Organisation, 1997), p. 13.
- ⁵² Maung Aung Myoe, *Building the Tatmadaw*, op. cit., p. 206.
- ⁵³ Callahan, “Of kyay-zu and kyet-su”, op. cit., pp. 46–48.
- ⁵⁴ This was subject to the caveat, however, that SIPRI lacked reliable data on Myanmar’s annual defence expenditure. *SIPRI Yearbook 2005: Armaments, Disarmament and International Security* (Stockholm: Stockholm Peace and Research Institute, 2005), p. 318.
- ⁵⁵ By way of illustration, an aircraft is a weapons platform. The missiles it carries are weapons. Together, they constitute a weapon system.
- ⁵⁶ For example, observers in Yangon were alerted to the delivery of Chinese QBZ-95 assault rifles last year, when the bodyguards of senior Tatmadaw officers were seen in public armed with these weapons. Interview, Yangon, January 2009. See also “China Exports Its Radical New Assault Rifle”, *Strategy Page*, 28 February 2009 <<http://www.strategypage.com/htm/w/htwep/articles/20090228.aspx?comments=Y>>.
- ⁵⁷ In addition to the IISS’s annual *Military Balance* and various yearbooks published by Jane’s, such lists have been compiled by journals like *World Defence Almanac*, *Military Technology*, *Asian Defence Journal* and *Military Powers Encyclopaedia*. See also Cordesman and Kleiber, *The Asian Conventional Military Balance in 2006*; and Aung Zaw, “A Growing Tatmadaw”, *The Irrawaddy* 14, no. 3 (March 2006) <http://www.irrawaddy.org/article.php?art_id=5537>.
- ⁵⁸ Codevilla, *Informing Statecraft*, op. cit., p. 420.
- ⁵⁹ Bertil Lintner, *Land of Jade: A Journey from India through Northern Burma to China* (Bangkok: White Orchid Press, 1996), pp. 238, 255.
- ⁶⁰ Accounts by foreigners who claim to have fought in Myanmar vary in reliability. See, for example, David Everett with Kingsley Flett, *Shadow Warrior* (Camberwell: Michael Joseph, 2008); Mike Tucker, *The Long Patrol: With Karen Guerrillas in Burma* (Bangkok: Asia Books, 2003); and T.J. Bleming, *War in Karen Country: Armed Struggle for a Free and Independent Karen State in Southeast Asia* (New York: iUniverse, 2007).
- ⁶¹ See, for example, *Comments by SLORC Army Defectors*, Karen Human Rights Group, 20 June 1994; “Interview with an SPDC Child Soldier”, Karen Human Rights Group, *Report from the Field*, 26 April 2006; “Life inside the Burma Army: SPDC deserter testimonies”, Karen Human Rights Group, *News Bulletin*, 9 May 2008; and “Interview with an SPDC deserter”, Karen Human Rights Group, *News Bulletin*, 28 July 2008.

- ⁶² Maung Aung Myoe, *Building the Tatmadaw*, op. cit., pp. 33–42. See also William Ashton, “Myanmar: Invasion fears prompt search for air defences”, *Asia-Pacific Defence Reporter* 27, no. 2 (March 2001): 32–34.
- ⁶³ Bertil Lintner, “Myanmar’s Chinese Connection”, *International Defence Review* 27, no. 11 (November 1994): 26.
- ⁶⁴ Clifford McCoy, “Myanmar’s losing military strategy”, *Asia Times Online*, 7 October 2006 <http://www.atimes.com/atimes/Southeast_Asia/HJ07Ae01.html>.
- ⁶⁵ Maung Aung Myoe, *Building the Tatmadaw*, op. cit., p. 193.
- ⁶⁶ Michael Herman, “Intelligence and the Assessment of Military Capabilities: Reasonable Sufficiency or the Worst Case?”, *Intelligence and National Security* 4, no. 4 (October 1989): 772.
- ⁶⁷ Joseph S. Nye, “Peering into the Future”, *Foreign Affairs* 73, no. 4 (July/August 1994): 86.

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