Ordering and controlling the dimensions of strategy

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Introduction

Achieving security through military power is dependent upon strategic success. Unfortunately, strategy – the process that coverts military power into policy effect – is a complex and unforgiving activity. The strategist, though, is not without assistance. Strategic theory offers some guidance on how to manage the complexities of using force in the pursuit of policy. When it comes to strategic theory, there are a host of different universal theories to choose from. Aside from the classic works of Clausewitz (1976) and Sun Tzu (1971), the strategist will find value in Lawrence Freedman's Strategy: A History (2014); Edward N. Luttwak's Strategy: The Logic of War and Peace (1987 Luttwak, E.N., 1987. Strategy: the logic of war and peace. Cambridge, MA: Belknap Press.); Admiral J.C. Wylie's Strategy: A General Theory of Power Control (1967); and Thomas C. Schelling's The Strategy of Conflict (1980), to name just five.

Moreover, when teaching strategy, a number of different approaches and taxonomies are on offer. There exists a general consensus that the objective behind Professional Military Education (PME) is to develop the analytical mind of future strategists (Murray 2000, 31–39.), training them how to think strategically about the relationships amongst ends, ways, and means. To that end, strategy is best taught through theory and practice, within conceptual frameworks that enable the strategist to better comprehend unique strategic situations through the prism of enduring themes (Auerswald et al. 2007 p. 1) and to think intuitively (Gray R.C. 2010 p. 55). Examples of the taxonomies available include Kennedy's (2010 Kennedy, R., p. 26) 7 categories of strategic inquiry; Marcella and Fought's (2010) integrated model of strategy; and the 11 themes found at the US Naval War College (Lee 2010, p. 117). A range of pedagogic techniques is also evident in modern PME. These include seminars, staff rides, case studies, and problem-solving exercises. To reflect the complexity of the modern strategic context, a liberal arts approach is also evident (Chiabotti 2008, 73–76. McCausland 2008 McCausland, J.D. 2008).

One of the most important contributions to the theory of strategy is found in Gray's 1999 work, Modern Strategy (Gray 1999). In this seminal work, Gray performs an important service for the Strategic and Defence Studies community. His development of the dimensions of strategy has theoretical, pedagogic, and practical value. Theoretically, the dimensions provide a framework that corrals the many influences on the process of strategy. This is a good starting point for reflection upon the multiple interactions that occur within strategy (Dorff 2010, p. 4). In the classroom (either in a civilian or defence setting), the dimensions provide a structured approach to teaching strategy. Indeed, many students find that the dimensions of strategy provide a readymade analytical structure, especially when discussing case studies. In terms of the liberal arts approach, Gray's exploration of the myriad dimensions is useful because it does not isolate strategy in a conceptual vacuum, but correctly perceives it situated within a broader context. Finally, practically the dimensions can act as a sort of conceptual checklist for the practitioner. Not in a mechanistic linear fashion, but rather to remind him of the many elements that must be factored in when planning and conducting strategy.

Gray's taxonomy recognizably built upon the earlier work of Carl von Clausewitz and Michael Howard. In On War, the former identified five "elements of strategy": moral, physical, mathematical, geographical, and statistical (Clausewitz 1976 p. 183). Similarly, in his 1979 paper, "The Forgotten

Dimensions of Strategy", Howard located four such dimensions: social, logistical, operational, and technological (Howard 1979). Although these earlier two attempts at identifying the dimensions of strategy were inspirational to Gray, they are embryonic in comparison to the taxonomy found in Modern Strategy. In all, Gray identifies 17 dimensions, which he divides into 3 categories: "People and Politics", "War Preparation", and "War Proper". The first category includes people, society, culture, politics, and ethics. War Preparation has economics and logistics, organization, military administration, information and intelligence, strategic theory and doctrine, and technology. Finally, War Proper provides the remaining six dimensions of military operations, command, geography, friction, adversary, and time.

Gray is rightly wary of claiming that his dimensions represent the final word on the subject. Indeed, he is conscious to recognize that "[s]eventeen dimensions are preferred here, but the precise number does not matter so long as everything of importance is properly corralled" (Gray 1999, p. 24). With that in mind, this paper seeks to further develop the theory of the dimensions of strategy, providing a new dynamic interpretation of the process of strategy. In doing so, this work makes three important contributions. First, the work adds to existing theory by dividing the dimensions between those that are internal and external to the process of strategy making. In this sense, in reference to the internal dimensions, strategy is something you participate in directly; something you drive forward. At the same time, the external dimensions ensure that strategy is something beyond you, something that has a nature beyond the driven process. Second, by exploring how the dimensions interact, and by advancing the proposition that there are dominant dimensions, this paper advances the didactic value of existing theory by enabling students more fully to explore the dynamic process of strategy. Finally, by advancing the concept of "control" over the dimensions, the work develops this important concept in the theory and practice of strategy. Control is an idea most forcefully advanced by Wylie (1967 Wylie.) However, whilst Wylie's description of control is based upon exercising control over centres of gravity, the theory presented here identifies how the different dimensions can be controlled to aid strategic performance. This is an important step forward in strategic theory, for as Gray (2009 Gray, p. 8) himself argues, there are many causes of poor strategic performance that are beyond the control of the strategist. This paper modifies this position, providing an image of strategy that is more malleable. To illustrate how this occurs, the paper begins by dividing the dimensions into internal and external. The strategist, to a certain degree, can control the former; whereas the latter are beyond any form of direct control. The article will then explain how control of the internal dimensions enables the effects of the external dimensions to be managed or offset. The result is a process of strategy that is complex, challenging, dynamic, but manageable.

Internal and external dimensions

In Gray's theory, whenever strategy is extant, all of the dimensions are in play. Furthermore, strategic success requires competence (or fortune) in all 17 dimensions: "Incompetence or ill fortune in any of strategy's seventeen dimensions might prove fatal for the whole enterprise" (Gray 1999, p. 25). Clearly then, strategic success requires not only that the strategist recognizes the existence of the dimensions, he must also be able to exert some degree of "control" over them. If control is not forthcoming, any one of the dimensions may overwhelm the strategic enterprise and lead to failure. The good news is that control can be exercised over some of the dimensions. This positive thought is tempered somewhat by the knowledge that seven of the dimensions do not fall within the orbit of control. In order to understand which of the dimensions are subject to control, we must go back to the notion of strategy as process. Within the process of strategy, certain dimensions are internal to

that process. In contrast, there are other dimensions that are external to the process, but still influence the overall performance and success of a strategic enterprise. This paper will now identify which of the dimensions are internal and which are external. Since some of the dimensions exhibit both internal and external features, classification is not always straightforward. In these instances, a judgement is made on the basis of how much direct control can be exercised over the dimension in question within the process of strategy.

Internal dimensions

People, perhaps the most fundamental of the dimensions: "People matter most" (Gray 1999, p. 26), are internal to the process of strategy because they can be chosen and/or trained to behave and perform as required – within reason. It is important to emphasize this latter caveat as a general proposition. Whenever we write that certain dimensions can be controlled, it should be recognized that control might not be absolute. Rather, these internal dimensions can be controlled to a sufficient extent to exert positive influence over strategic outcomes. The level of control is especially significant for the second internal dimension, politics. There would be some justification for including politics in the external category. After all, the process of politics, which produces the policies that strategy advances, is related to, but somewhat separate from, strategy. Nonetheless, its inclusion as an internal dimension is ultimately justified by the fact that the process of strategy may include adjustments to policy objectives in the light of military realities. Thus, it may be that politics externally provides strategy with policy objectives, but the process of strategy – the unequal dialogue – has an influence on those objectives (Cohen 2002).

Akin to politics, the dimension of economics and logistics has external elements, but ultimately is subject to a degree of control within the process of strategy. Raw economic factors, such as Gross Domestic Product or access to natural resources, are external to strategy. However, the economy can be manipulated to serve strategic ends. Resources and effort can be rerouted to supply the military machine in times of war. Moreover, logistics lie very much within the process of strategy. A more effective logistical process can significantly aid military and strategic effort. The next two dimensions, "organization" and "military administration" are best coalesced into the new joint dimension of organization and administration. Although in Gray's analysis there is a distinction between these two dimensions, they are clearly closely related. Since they are both concerned with the bureaucratic architecture and procedures of strategy, there is little harm in bringing them together as in the case of economics and logistics. This new dimension deserves its place in the internal category because institutional organization and process can be improved to better serve strategy. That being said, the scale of the challenge involved should not be underestimated. Any socio-political activity – including defence policy and strategy – can be severely retarded by organizational and/or bureaucratic difficulties.1

Although intelligence work may be subject to external counterintelligence, it is an internal process that can be controlled and improved with more resources; better training, etc. Likewise, technology, military operations, and command are all influenced by interaction with an external enemy. Yet, they are all to some degree under the control of the strategist. For example, he can seek to procure better technology, improve battlefield performance with training, and have a better command selection procedure or command ethos. Finally, and in support of the latter three dimensions, is theory and doctrine. Again, theory and doctrine – how the strategic community thinks about and

intellectually engages with the use of military power for policy effect – is not something that is parachuted in from on high. Rather, theory and doctrine happens internally, and can be neglected or promoted as such.

External dimensions

The remaining seven dimensions, although open to influence and management (see below), are essentially beyond the direct control of the internal process of strategy, and are thereby external. Time may be used to one's advantage. For example, it has long been understood that protracted campaigns can prove beneficial to certain forms of strategy in certain circumstances (most obviously insurgency). Nonetheless, despite its utility (or rather the utility of the perception of time), time itself is beyond control. It is an external factor that progresses in a linear and inexorable fashion. To clarify, time itself cannot be manipulated or controlled. Rather, other dimensions (for example, military operations) are used to influence perceptions of the passage of time in relation to political outcomes, costs etc. To use Gray's own words, time is the "least forgiving of error among strategy's dimensions" (Gray 1999, p. 43).

Almost as unyielding as time is geography. Like time, geography can be used to one's advantage. Indeed, in contrast to time, geography actually can be manipulated, to a limited degree. Facing a lengthy siege at the island city of Tyre, Alexander the Great reshaped his physical environment by extending the land via a 200-foot wide mole. This enabled Alexander to deploy his land siege engines against the fortified island city and capture the crucial Phoenician port (Lonsdale 2007a). The capture of Tyre had a substantial impact on the campaign. Not only did Alexander substantially increase his naval assets. His victory over Tyre, and his treatment of the defeated population, compelled many other important cities to surrender without a fight. This example illustrates that changes in the tactical and operational geographical environment can have strategic consequences. Cyberspace is even more malleable. Although commonly understood as a virtual space, cyberspace is largely based in the physical realm within computers, servers, and cables. Thus, the extent and shape of cyberspace is the result of man's actions. Such examples, although noteworthy, are the exceptions that prove the rule. Generally speaking, geography is a reasonably set stage (with occasional changes due to man's actions or changing metrological and other natural phenomena), the external influence of which the strategist must cope with.

It has already been established that politics, although somewhat external to strategy, is an internal dimension due to the fact that the policies that result from politics need to be malleable within the process. This is not the case for the dimensions of society, culture and ethics.2

Although all three reflect, to some degree, the strategic community in question, they are not subject to control from those in charge of the strategic process. Rather, they exist apart from the process of strategy, and any influence on them from within the process of strategy is severely limited. Thus, society, its culture(s), and the ethics that result, place external pressures on the strategic process. Indeed, these three dimensions may place limits on what is viable for the strategic practitioner.

Rather obviously, even further outside of control, and therefore more external in character, is the adversary. It is true that the adversary's perceptions can be influenced. Moreover, if he is defeated and destroyed, his influence is reduced almost entirely from the process. Nonetheless, if the enemy is still present in some form, control over this dimension is never total. An extant enemy, even after defeat, can in theory return to action. In this sense, any control exercised over him may be temporary. Note, for example, how forces of the defeated Saddam Hussein government in Iraq

transformed in to irregular forces, and contested the American-led coalition for control of the country. Surprisingly, the enemy's vote is often underestimated in strategy, as evidenced by the following quote from General George Pickett. In the aftermath of the Confederate defeat at Gettysburg, when asked for an explanation, Pickett responded: "I think the Union Army had something to do with it" (DiNardo and Hughes 1995, p. 76). Finally, we turn to Clausewitz's omnipresent concept of friction. Yes it is true that some sources of friction are internal to the process of strategy. More reliable technology and higher quality training are just two of the ways that internal friction can be reduced. However, the causes of friction are so ubiquitous, and often to be found outside of the process of strategy (the weather, for example) that ultimately it must be regarded as an external dimension.

Controlling the dimensions of strategy

Since incompetence in any of the dimensions can prove fatal to strategic performance, the existence of external dimensions, beyond the control of the strategist, is of great concern. Fortunately, it is the contention of this paper that the internal dimensions of strategy can be utilized to control, influence, or manage the external dimensions. This makes performance in the internal dimensions even more important, and may tell us something about the relative importance of the different dimensions. Gray accepts that the relative significance of the dimensions will differ from case to case, yet he rejects the notion that one can order the dimensions adequately in a general theory of strategy (Gray 1999, p. 25). This paper challenges that position, but in doing so is conscious of Gray's warning against the malady of reductionism (Gray 2013, p. 6). Strategy should always be a unified activity, with all dimensions taken account of. That being said, some dimensions are more equal than others. This next section will take the external dimensions in turn; identifying which of the internal dimensions can be used to exert influence over them.

Time

It has been identified that time is perhaps the external dimension par excellence in strategy. How then, does one manage time or use it to exert positive influence? Perceptions on the relative importance of time can be influenced by politics. Most significantly, politics plays its role by the setting of policy objectives that are commensurate with a realistic timeframe. The interaction amongst the dimensions is complex here, because the social, political, and cultural dimensions influence the notion of what constitutes a realistic timeframe. Economics and logistics also have a role to play. Specifically, the domestic economy should provide the wherewithal to sustain a war effort over the required period. The Second World War is illustrative of the interplay between time and economics. As time passed, Germany and Japan both suffered from a mismatch in economic might relative to their enemies. Although Germany performed better in industrial terms than Japan, neither of the main Axis powers was able to bend the time dimension to their advantage – through quick victory. This is exemplified by Admiral Yamamoto's infamous comment to the Japanese leadership: "I shall run wild considerably for the first six months or a year, but I have utterly no confidence for the second and third years" (Wood 2007, p. 23). Time favoured the Allies as they slowly mobilized their economic resources. This was particularly evident in the Pacific theatre, where from 1944 onwards the United States deployed increasingly overwhelming maritime resources (Ellis 1990, Wood 2007).

When seeking to manage or exploit the time dimension, the method of waging war is clearly important. In this sense, the dimensions of theory and doctrine, military operations, command, technology, and intelligence all perform important functions. Taken together (for this and all other sections of the paper), these five dimensions can be corralled under the heading "Warfighting". Rather obviously, the form of war chosen, and how well it is fought, have an impact on the significance of the time dimension. When time is against you, rapid conclusion of a campaign – enabled by superior performance of forces trained and equipped for swift operations – will not only neutralize any negative impact of the time dimension, it may actually turn time to one's advantage. Nuclear strategy in the cold war well illustrates how the warfighting dimensions can be used to offset potential disadvantages from the time dimension. A step change in the challenge of nuclear deterrence came about when thermonuclear devices were deployed on Intercontinental Ballistic Missiles (ICBM). This marrying of enormous destructive power to ballistic missile meant that annihilation could be delivered in minutes. In the context of the cold war, such a threat severely restricted a state's policy and strategic options. However, a combination of theory, doctrine, technology, command and control, intelligence on the enemy system, and operational concepts, provided secure second-strike capabilities that diminished the threat somewhat, and gave a degree of freedom back to the makers of policy and strategy. In this example, the time dimension, whose profile had been heightened by the dimension of technology (with the invention of the ICBM), was put back in its cage – to some degree.

Geography

It is not difficult to find examples of when the geographical dimension has exerted considerable influence over the outcome of war (Winters et al. 1998, Gray and Sloan 1999). As Athens and Sparta both discovered during the Peloponnesian War, the influence of geography can severely stymie the successful prosecution of strategy. As a maritime power, Athens found it difficult to neutralize Spartan land power; and vice versa (Thucydides 1972). Similarly, Germany's remarkable early success in the Second World War slowly produced diminishing returns when faced with the scale and depth of the Soviet Union. As with time, politics once again has a role to play in dealing with the geography dimension. Ideally, there needs to be harmony between the policy objectives sought and geostrategic realities. Simply put, policy objectives should not be pursued that produce overly challenging geographic obstacles. To ignore the geographical dimension may lead to fatal incompetence in this vital area of strategy. Whilst sage advice; this is not always easy to follow. It may be that policy objectives require strategic activity in an unfavourable geographical environment. Indeed, an enemy may force such a situation upon you. Even when choice appears to exist, it may be severely confined by other factors. Nazi Germany, for example, was destined to go east. Ideologically, the Third Reich could not avoid a clash with the Soviet Union. Nonetheless, if the strategic dialogue (between policy and the military instrument) is to function effectively, it must consider seriously the dimension of geography.

Accepting that politics may sometimes regrettably force strategy into an unfavourable geographical situation, other internal dimensions must be employed to manage the situation. Once again, the warfighting dimensions come to the fore. Certain forms of warfare are more suited to certain geographical environments. Following the attack on Pearl Harbor and the loss of the Philippines, the United States had two main campaign options, both of which would require quite different forms of operation. They could move north from Australia, working their way to Japan via the Philippines and Mainland China – in the event they bypassed the mainland. Alternatively, they could strike directly west from Pearl Harbor across the Pacific to attack Japan. In the event, the United States pursued

both campaigns. This dual strategy was made possible by the resources of the United States, but also because they had invested considerably (training and equipment) in amphibious and carrier-based warfare during the interwar period (Millett 1998, Till 1998). Thus, the United States was able to manage the considerable challenges of the geographic dimension in the Pacific, and indeed turn it to their favour. This effort was supported considerably by an effective intelligence campaign that permitted the United States to use its capabilities more efficaciously in the vast distances of the Pacific theatre. In essence, efficacious military performance can either exploit the geographical dimension or at least neutralize its negative effects.

Economics and logistics can also play a major part in managing the geographical dimension. In Burma during the Second World War, the British faced a highly challenging geographic environment. British forces faced an underdeveloped transportation network that largely ran north to south. Unfortunately, the British, operating from their bases in India, had to move west to east through Burma. Furthermore, in the Japanese, they faced an enemy well suited to operating with a low logistical footprint, and one that was expert at rapid manoeuvre to cut vulnerable lines of communication. Britain's response, and one that significantly diminished the impact of the geographic dimension, was to develop a sophisticated system of air-based logistics. Such an approach enabled the British to seize the initiative with their Chindit raids, and subsequently defeat the Japanese in the Imphal Plain (Slim 1957, Kane 2001).

Society and culture

Society and culture provide a foundation upon which strategy must be built. These two closely related dimensions also provide judgement on strategic performance. Indeed, either consciously or subconsciously, society and culture can bind strategy, placing restrictions on what is permissible. When Williamson Murray and Mark Grimsley described strategy as "the art of the possible", they could have been referring to the influence of these two external dimensions (Murray and Grimsley 1994). For societal and cultural reasons, certain forms of warfare may be impossible, unacceptable, or simply too difficult for certain strategic actors. Likewise, the society that underpins a strategic campaign may not accept costs (financial, human, or political) above a certain level. That being the case, the internal dimensions of strategy must be carefully marshalled to manage their two external cousins.

As with geography, politics plays an important role here. Where possible, the political process should produce policy objectives that are realizable from a social and cultural perspective. This is challenging of course, not only because the political process itself is not easy to control, but also because strategic circumstances may change dramatically over the course of a war. History is littered with limited wars that escalated, asking ever-greater sacrifices from society. In such circumstances, it is essential that the unequal dialogue continue to function, adjusting policy and military effort as appropriate to maintain harmony. In essence, the political dimension must set policy objectives that society can sustain. This point is also valid in economic terms. The economic and logistics dimension must provide the resources required for the war effort, but must do so at a cost acceptable to the supporting society. There often is a close relationship between the policy objectives and the costs a society is willing to bear. Wars of great and obvious national interest will engender a more sacrificial attitude within society.

Finally, we look once again to the warfighting dimensions. War must be waged in such a manner that is socially and culturally sustainable. For some societies and cultures, this will translate into a form of

operations that is low on casualties and fought primarily at standoff range (Luttwak 1995, Coker 2001). For other societies and cultures, honour and self-sacrifice may define acceptable military operations. Because the enemy has a vote in war, it is not always possible to fight exactly the way one's society demands. And as Gray reminds us, strategic culture does not always act as a straightjacket to strategic performance (Gray 1999, p. 29). Rather, it provides a general field of play, within which a degree of flexibility is possible. Nonetheless, taking these qualifications into account, we still conclude that strategy must be conducted in a manner that is consistent with the social and cultural basis for the use of force. Doing so will help to minimize the negative effects of the social and cultural dimensions of war. One must also take into account the manner in which the enemy society perceives the use of force. If one is able to wage a form of warfare that is difficult for the enemy, then one can tilt the social and cultural dimensions in one's favour.

Ethics

Ethics are sourced from within the society of the strategic community and beyond. Although moral concerns may lapse somewhat during war (at the very least the prohibition on killing is lifted), ethical considerations cannot be ignored entirely. Indeed, ethics – often expressed through the Laws of War – have an increasing influence on the practice of strategy. The first method to manage the influence of the ethical dimension is through one's people. An increasing amount of energy is spent within the armed forces to educate their men and women about the moral and legal implications of their actions. Preventing a moral faux pas is an important step in reducing the negative influence of the ethical dimension.

With reference to the Just War tradition, politics plays an essential role in managing the ethical dimension. If the moral – or indeed the political – legitimacy of a conflict is questioned, then the ethical story becomes much more complex and challenging. By paying close attention to the jus ad bellum criteria, the recourse to war is based on more solid ethical ground. As will be discussed shortly, fulfilling jus ad bellum does not free one to operate with impunity in relation to jus in belo (Walzer 1980). Nonetheless, having a recognized just cause, right intention etc. clarifies the moral discourse on any particular use of force. Perhaps more importantly, Richard Overy argues that fighting for a just cause may actually inspire better strategic performance (Overy 1996). The problems associated with the 2003 invasion of Iraq well illustrate the challenges of this external dimension. From the get-go, the Bush and Blair governments (as the two leading powers) faced widespread criticism for their decision to force regime change in Iraq. The subsequent war was never able to free itself from this difficult start. Indeed, 12 years on, reports and inquires into the Iraq war continue to make political headlines.3

It is plausible to argue that a war that is seen to fail the jus ad bellum criteria will be subject to greater scrutiny in relation to jus in belo.

Even a just war can be fought in an unjust manner. Thus, to minimize the negative impact of the ethics dimension, where possible military operations must be conducted in a manner consistent with the war convention.4

One way to do this is to apply robust Rules of Engagement that reflect the Laws of War and the jus in belo criteria of discrimination and proportionality. Furthermore, certain modes of warfare, often facilitated by modern technology, may help to reduce ethical conundrums. Although not without its own unique ethical issues, cyberwar offers a largely non-violent means to pursue strategy (Dipert 2010, Schmitt 2013, Allhof et al. 2016.). The Stuxnet attack on the Iranian nuclear programme

presents a tantalizing glimpse into such possibilities. What previously would only have been possible with a kinetic attack, as in the Israel strike on Osirak in 1981, is now possible non-violently via a cyber attack (Kerr et al. 2010). Similarly, precision strike systems have enhanced the potential of discriminating operations. Although still somewhat controversial – primarily for political reasons – targeted killing appears to offer the possibility for significant strategic effect at low human cost (Byman 2006, Kober 2007).

Adversary

It is inherent to the very nature of war that strategy is conducted against an intelligent foe. Although enemies can be manipulated and ultimately defeated, they can rarely be controlled. Once again, politics takes the lead in seeking to manage the adversary dimension. The adversary, or likely adversaries, must be taken into account when forming policies to be pursued with military power. Against certain enemies, some policy objectives will be unattainable. As previously mentioned, strategy is the art of the possible; and this must include the original formation of policy. Such an approach can be found in limited war theory, especially as it relates to conflicts between great powers. This is especially true if they posses nuclear weapons. Although significantly flawed, especially in its tactical and operational details, Henry Kissinger's Nuclear Weapons and Foreign Policy was a noteworthy attempt to manage the process of strategy in the nuclear age. Recognizing that total war with the Soviet Union was unacceptable, Kissinger sought to develop viable limited forms of war – including limited policy objectives (Kissinger 1957). This strikes right to the heart of Clausewitz's theory of strategy; that the effort exerted will be commensurate with the level of the objective desired (Clausewitz 1976, p. 81).

If the policy objective is reasonable, relative to the nature of the enemy, then a combination of internal dimensions comes into play. Economics and logistics may provide the means to overwhelm the enemy, thereby neutralizing his potential to disturb one's strategic process. Similarly, superior performance in information and intelligence can be used to outsmart him. This, of course, all culminates in the need to defeat the adversary in the battlespace. In this way, superior logistics and intelligence must be put to good effect by superior war conduct. The Second World War amply illustrates the conceptual model just described. Nazi Germany proved to be an extremely dangerous foe. For the Allies, then, the adversary dimension loomed large as a threat to their strategic performance. So great was the potential of this external dimension, that it took enormous advantages in the economic and intelligence dimensions to underwrite competition in the conduct of war dimensions. Over time, the Allies became good enough in the latter to slowly push Germany back into the Reich (Gray 2007, pp. 124–156).

Friction

As previously stated, the sources of friction are so numerous, and so many are beyond anyone's control, that it represents an omnipresent thorn in the strategist's side.5

However, this does not mean that friction cannot be mitigated or that it cannot be managed to an acceptable level. After all, despite the presence of friction, strategy gets done – policy objectives are achieved. In the first instance, we must turn once again to the people dimension. As clearly stated by the United States Marine Corps, one's people need to be prepared to operate successfully within a friction-laden environment (Hayden 1995, p. 38). There are many ways by which this can be

achieved. Good realistic training and historical knowledge during PME are but two ways in which people will come to understand the role friction plays in strategy. The politics dimension must accommodate friction by providing a degree of flexibility in policy objectives. One must, of course, avoid the military tail wagging the policy dog. That being said, the political process must be able to adapt to setbacks that inevitably flow from the presence of friction in the conduct of war. It may be that the policy objective itself changes. Alternatively, if the policy stays the same, the political processes may have to accept longer timeframes or more human and economic costs. The latter leads us to the logistics dimension. With friction lurking around, it is plausible (and historically evidenced) that military adventures often last considerably longer than originally anticipated. That being the case, those in control of the economic and logistics dimension should ensure that a longer war is a viable option.

Finally, all of the warfighting dimensions have important roles to play in managing friction. Better and more reliable technology should help to reduce some common causes of friction. When friction does occur, its effects may be mitigated if said technology has been procured in reasonable quantities. Air power provides just one example of how technology relates to friction. Although operating in the third environment brings its own unique sources of friction, it does largely bypass the friction that emanates from moving through dense or difficult terrain. Well-developed, flexible doctrine, allied to high performance in military operations, should help to reduce the play of friction. To draw a literally appropriate analogy; a well-designed, well-built, well-oiled car should operate more smoothly than one that has been hastily thrown together on the cheap. To stay with our analogy; the superior car still needs to be driven effectively. Thus, the command dimension plays an essential role here. In the face of friction, the military genius (to use Clausewitz's nomenclature) is noted for his ability to cope with friction and lead his men through to victory (Clausewitz 1976, pp. 100–114). In the final analysis, we can conclude that friction is always present in strategy. Nonetheless, astute performance in the internal dimensions can render friction manageable.

The impact of managing the external dimensions

It should already be evident that interactions amongst the dimensions of strategy are complex and multi-layered. However, said complexity goes further. It is not only the case that the internal dimensions can be used to manage the external dimensions. External dimensions, once they have been managed by the internal dimensions, have an impact on the other external dimensions. This paper will once again take each of the external dimensions in turn, noting how management of the other external dimensions enables broader levels of control – thus identifying the complexity of dimensional interactions. This added depth to the analysis provides further conceptual and didactic value to the theory, taking the student further into the dynamic process of strategy. The discussion that follows will identify and discuss the most obvious interactions. It is reasonable to suggest that in small and large ways all of the dimensions of strategy interact with one another. However, to avoid conceptual over-clarification, this paper will focus on the most significant of these interactions.

Time

Management of the geography dimension may enable the strategist to shorten or protract the war for strategic benefit. For example, conducting a defence-in-depth and/or a scorched earth strategy, may deny the enemy the objectives he desires within a reasonable timeframe. In turn, this may raise his costs and reduce his will or that of the society that underpins his strategic effort. A variation in

this approach can be seen during the Punic Wars. Facing a tactically superior enemy in Hannibal, the Romans implemented the Fabian strategy, which involved operational manoeuvre throughout Italy to avoid battle except under the most favourable circumstances. The Romans essentially hid within the peninsula and denied the Carthaginians the decisive victory they required, and over "time" the latter's will ebbed away (Bagnall 1999).

To be seen to be fighting a legitimate just war may provide the strategist with a more permissive environment with regards to the time dimension. If the ethical dimension weighs in one's favour, then society and wider opinion may tolerate a more lengthy military effort. As previously noted, the opposite may also be true: society may have little stomach for a long drawn-out campaign fought in an ethically questionable cause. Society is also likely to be more tolerant of the passing of time if progress against the adversary is tangible and visible. One of the great challenges of counterinsurgency is that it is often difficult to "prove" that progress is being made. It is much easier to evidence progress with arrows on a map in regular war, than it is to display socio-political progress in a nation-building campaign. Finally, management of the friction dimension may enable a degree of positive influence over the time dimension. Reducing friction for oneself, especially if it is increased for the enemy, may facilitate a shorter, more efficient campaign. Whereas, in such circumstances the enemy may feel that there is not enough time for him to complete his objectives. In conceptual terms, a reduction in friction relative to the enemy may enable one to operate with a faster OODA Loop.6

Geography

If the strategist has greater mastery over the time dimension, he may be able to limit the negative effects of geography. Indeed, he may be able to use the geographical dimension to his advantage. This is particularly evident in insurgencies. Conscious of the fact that a protracted campaign normally works to their advantage, insurgents can make good use of geography to preserve their forces and extend the campaign further. In this way, we see that a symbiotic relationship exists between time and space. Overcoming the "adversary" also permits greater management of the geographical dimension. Controlling the flow of the war may enable one to control the play of geography. As the United States gained the upper hand in the Pacific War, they were increasingly able to choose where to fight or which routes of advance to take. It is true that certain geographical points were too crucial to be avoided. However, it is equally true that certain Japanese positions could be bypassed and isolated (even key bases such as Rabaul). Finally, measures to manage (reduce) friction can help reduce the negative impact of geography – a source of friction in itself.

Society and culture

When considering the impact of time, geography, and ethics, mastery of all of these dimensions can have a considerable effect on societal and cultural considerations. Clever management of time and geography may enable the strategist to shape a conflict to better suit the social and political mores of his society and its cultural norms. With reference to ethics, the negative influence of the social and cultural dimensions should be reduced if the war is identifiably just, both in cause and conduct. Finally, and rather obviously, mastery over the adversary plays an important role here. A losing adversary is less able to take actions that can affect social support for a war. Everyone loves a winner.

Ethics

The most important of the other external dimensions for ethics is society. A society that is supportive of a particular military adventure is more likely to be tolerant of the odd moral faux pas or ethically questionable actions. In this, the nature and actions of the enemy also have an important role to play. This can be seen during the Second World War. Nazi Germany presented such an existential and moral threat to western civilization that certain campaigns, especially strategic bombing, were tolerated for the greater good. This moral position was made easier by the fact that Germany was conducting its own bombing campaigns. In a sense, the Luftwaffe had opened the moral door to strategic bombing. In such circumstances, consequentialism tends to take precedence over deontological considerations. To suggest otherwise would be to argue that prior to the war the British public were comfortable with the notion of burning German women and children in their homes. It is true that any war is partly a reflection of the societies and cultures that fight it. At the same time, there are other forces (dimensions) at work that play a role in shaping both the war itself and attitudes towards it.

Adversary

In strategy, the adversary represents either an obstacle to achieving one's policy objective, or he may actually be the objective – one may wish to destroy, deter, coerce or in some other way control an adversary. Mastery of the time and geography dimensions potentially confers advantage over the enemy. Being less susceptible to temporal or spatial concerns provides the strategist with a certain freedom over a less competent foe. Likewise, having a strong social and cultural dimension to strategy establishes a strong foundation from which to engage the enemy. The same can be said for friction. Reducing friction, whilst hopefully increasing it for the enemy, should provide advantage in strategy. Ethics presents an interesting case in this discussion. As previously mentioned, Overy asserts that moral superiority provides strategic advantage. In contrast, Clausewitz warns against giving moral concerns any prominence in war (Clausewitz 1976, pp. 75–76). Which of these two positions is correct? In terms of the dimensions of strategy, the answer is neither or both, depending upon the circumstance. Managing the ethical dimension in strategy is not about taking the superior moral position – although that may confer advantage in some situations. Rather, it is about performing competently in the ethical external dimension. How competency is defined is situational. In many circumstances, taking the moral high ground will confer advantage, with enhanced legitimacy producing increased political and social support. However, there will be times when one should not, as Clausewitz warns, blunt one's sword in the name of humanity (Clausewitz 1976, p. 309). Thus, in order to be strong in the ethics dimension, "strategic necessity" is the order of the day. A utilitarian approach, which treats ethics as just another dimension to be manipulated to one's advantage, is what is called for (Lonsdale 2011). In most circumstances, this approach will require a limited and careful use of force. In others, it may call for the indiscriminate bombing of urban areas, as in Germany and Japan. This does not mean that the ethics dimension is ignored. Rather, its influence is shaped to serve the objective of defeating the enemy.

Friction

Since the sources of friction are so ubiquitous, it stands to reason that mastery of the other external dimensions will have a positive impact on the friction dimension. Time, geography, society, culture, adversary and ethics all, in their different ways, have the potential to cause friction. Thus, to manage these dimensions in a positive sense is to potentially reduce some important sources of friction. As previously stated, the latter can never to eliminated entirely; rather it can be managed.

All dimensions are equal, but some are more equal than others

Gray argues that none of the dimensions are more important than any other in a general theory of strategy. Since we must regard strategy as a coherent unified activity, this seems a reasonable position to take (Gray C.S. 2010). That being said, the findings of this paper somewhat modify Gray's position. When considering the relative importance of the different dimensions of strategy, one is reminded of the final Commandment in George Orwell's Animal Farm: "All animals are equal, but some animals are more equal than others" (Orwell 2000, p. 118). Whilst it is true that all of the dimensions are important and are in operation in any strategic context, politics and the warfighting dimensions are paramount in controlling the external dimensions of strategy. Upon reflection, this outcome should not come as a surprise to those of a Clausewitzian persuasion. On War is a rich and diverse text covering a range of matters important to war. Nevertheless, two of the dominant themes in On War are the primacy of policy and the significance of battle. Policy is the engine that drives strategy, and battle (or the threat of) is the fuel by which strategy functions. Thus, it is unsurprising that these two elements of strategy (covering six of the dimensions) have such prominence.

Taking politics first, it is clear from the preceding analysis that this internal dimension has a role in managing all of the external dimensions of strategy. In relation to time, geography, society, culture, ethics, the adversary, and friction, the main positive function of politics is to set realizable, legitimate policy objectives. In doing so, politics provides a pragmatic basis for strategy; it negates or at least mitigates the negative forces emanating from these external dimensions. By starting-off on the right foot, the political dimension exerts some control over the external dimensions by pre-empting their worst effects. Of course, the process of strategy is not static. The unequal dialogue must be allowed to function; politics must at times facilitate shifting objectives to continue to account for negative impulses emanating from the external dimensions. Strategy is dynamic, and hence our conceptual frameworks must reflect this for didactic and pragmatic reasons.

The setting of policy objectives initiates the strategic process, but it is military force that propels it forward. With respect to time and geography, war conduct should seek to exploit, shape, and manage these external dimensions in strategy. As with politics, in relation to society, culture and ethics, the conduct of military operations must be sustainable and perceived as legitimate. At the same time, performance in war is ultimately tested against an intelligent foe. As a significant interloper into the process of strategy, the influence of the adversary must be neutralized. Clausewitz's stark reminder must not be allowed to materialize: "the enemy can frustrate everything through a successful battle" (Clausewitz 1976, p. 97). The interplay between the external dimensions is considerable in relation to war conduct. How does one defeat the enemy, whilst at the same time serving the complex and subtle needs of the social, ethical, and cultural dimensions? On the one hand, Clausewitz is instructive when he warns against the dangers of "blunting one's sword in the name of humanity". On the other hand, war is not conducted in a social, cultural, and ethical vacuum. Where is the balance to be struck? Without limiting his theory to any precise instructions, Clausewitz presents the answer to this dilemma:

We can thus only say that the aims a belligerent adopts, and the resources he employs, must be governed by the particular characteristics of his own position; but they will also conform to the spirit of the age and to its general character. Finally, they must always be governed by the general conclusions to be drawn from the nature of war itself. (Clausewitz 1976, p. 718)

Finally, the preparation and conduct of operations must be cognizant of friction, and must be tolerant of inevitable setbacks that result from this omnipresent external dimension.

Conclusion: the dynamic dimensions of strategy and the implications for theory, teaching, and practice

This paper has, in line with extant theory, identified that the nature of strategy is composed of a complex set of interactions. However, where this theory differs, and indeed advances our understanding of strategy, is by showing that these interactions can be controlled. Specifically, the internal dimensions, over which the strategist has some control, can be utilized to manipulate the external dimensions that have a malign influence on the process of strategy.

This important observation has four substantial consequences for the theory, teaching and practice of strategy. First, the developed theory of the dimensions of strategy presented here is not passive. This "dynamic dimensions" model does not merely present a new inert taxonomy. Rather, it offers a conceptual framework with a focus on the active control of strategy. In this sense, the theory makes the conceptual representation of the dimensions come alive. This new approach more accurately reflects strategy in action, and provides advanced didactic value by highlighting the dynamic processes going on within strategy. It provides the student with a picture of strategy in motion. At the same time, this new theory provides useful guidance for the practitioner. The latter must see strategy as an ongoing process of complex interactions, but one that he has influence over. The theory encourages the practitioner to wrestle for control of this process.

Second, in tune with established pedagogic principles of teaching strategy, the dynamic dimensions model presented here helps develop critical thinking. It achieves this by focusing attention on how the dimensions interact. In this way, it makes us think more thoroughly about the active process of strategy. This is an especially potent pedagogic approach when used in combination with case studies. Whether historical or contemporary, a case study illustrates the dimensions in play as they interact with one another. Taking this dualistic approach, the student will appreciate how the strategists being studied exerted control over strategy to achieve their policy objectives; or didn't, as the case may be.

Third, the dynamic analysis of strategy underlines the prominence of the policy and warfighting dimensions. This finding more accurately reflects the nature of strategy. Without policy to drive military action, strategy does not exist. Violence without a policy motive is not even war. Moreover, from a didactic perspective the approach recommended here correctly places combat at the heart of PME. This reflects the established position that strategic theory is theory for action (Brodie 1949), and that the primary role of the military is to be effective in combat (Gray 2009, p. 26). This is not to underestimate the many other functions a modern military performs. However, whilst recognizing the latter, we should not ignore Clausewitz's statement that "it is inherent in the very concept of war that everything that occurs must originally derive from combat" [emphasis in the original] (Clausewitz 1976, p. 87).

Fourth, theoretically, didactically, and practically, the dynamic dimensions theory provides hope amongst the chaos of strategy. Whilst recognizing that strategy is the realm of almost infinite complex interactions, this paper suggests that the process of strategy belongs to us; it is under our direction – to a greater or less extent. Much theorizing about strategy concentrates on the difficulties and nonlinearity of using force for policy effect in a competitive environment. (Beyerchen 1992, Betts 2000, Jablonsky 2004, Lonsdale 2007b) Such an approach is legitimate. However, there exists the danger that as a result we perceive strategy as something beyond us, something barely within our control. The dynamic dimensions theory recognizes the complexity, but identifies our ability to master the process sufficiently to achieve success.

With his work on the dimensions of strategy, Gray substantially advanced the theory and teaching of strategy – with the potential for a commensurate improvement in practice. The main service Gray performed was to identify the multidimensional, complex nature of strategy. This current paper has sought to build upon the foundations laid down in Modern Strategy. In particular, it has ordered the dimensions into internal (controllable) and external (uncontrollable, but manageable) and discussed the complex interactions that exist amongst them. Finally, the paper has identified the dominant roles played by politics and the warfighting dimensions in managing said interactions. Undoubtedly, the other dimensions all play their part, and must be accounted for appropriately. Yet, for all of our additional theorizing, we are still left to conclude that the entire process of strategy largely rests on the setting of appropriate policy objectives and the violent execution of military operations.

NOTES

1. The classic analysis of this issue is Allison (1971). The consequences of organizational difficulties are explained in another classic work Wohlstetter (1962).

2. It should be noted that ethical norms beyond the strategic community also come into play – international law and norms. That being said, the strongest ethical influence is likely to come from within the community itself.

3. http://www.iraqinquiry.org.uk/.

4. The War Convention is defined by Michael Walzer as "the set of articulated norms, customs, professional codes, legal precepts, religious and philosophical principles, and reciprocal arrangements that shape our judgements of military conduct". Walzer, p. 44.

5. For a superior analysis of friction see Watts (1996).

6. OODA stands for Observe, Orientate, Decide, Act, and is the theory of Colonel John Boyd.

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