Chapter 26

Conclusion: Insights from Theory and Practice

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F. Osinga and T. Sweijjs (eds.), *NL ARMS Netherlands Annual Review of Military Studies 2020*, NL ARMS, https://doi.org/10.1007/978-94-6265-419-8_26

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Strategists are fond of saying that the nature of war is immutable, but its character is not.¹ Even Von Clausewitz, whose very objective was to develop a general theory of war, held that every age has “its own kind of war, its own limiting conditions, and its own peculiar preconceptions.”² The same can be said for strategy. History offers ample examples of strategic concepts that guide how means are to be connected to political ends in order to defeat adversaries in particular historical contexts. Warfighting concepts have included dislocation and exhaustion to target the adversary’s will, and attrition and annihilation to deal with its capabilities.³ In times of relative peace such concepts have included containment, assurance and most famously deterrence. The use and utility as well as the practical application—the character—of such concepts are context bound as they are determined by a range of social, economic, (geo-)political and technological factors.⁴ Some strategic concepts wither away and are consigned to the dustbin of history; other concepts persist and are updated to address the challenges of today’s world. Deterrence belongs to that latter category. It continues to feature as a prominent concept in contemporary strategic thinking and practice.

26.1 Deterrence Rediscovered

Although deterrence was neglected in military doctrines and real world campaign designs for about two decades following the Cold War, in practice it was never absent (and that disconnect might well have been one of the major factors hampering achieving operational success). In the first part of the book Lawrence Freedman elegantly lays out this recent history of deterrence in theory, policy and practice to remind us of its enduring presence and utility as well as its complexity. The Cold War flattered deterrence, he dryly observes, suggesting deterrence is easy. It is not. While in some cases general deterrence might have transformed into an established norm guiding international behaviour, in many cases deterrence was

¹Gray 2016.

²Von Clausewitz 1989, p. 593.

³Echevarria 2017, p. 9.

⁴Murray et al. 1994.

problematic and failed because it revolved around deterring specific unwanted behaviour in a crisis where a state or non-state aggressor thought his interests were better served with challenging the status quo. As Freedman concludes, “deterrence works best with unambiguous red lines, established over time, linked with vital interests, formulated in clear and credible messages, backed by actual capabilities, about what will happen if they are crossed. It will work less well as more uncertainties are introduced—about where the lines actually are, how much any transgressions will matter, whether there will be much of a response if they are crossed, and what difference that will actually make.” Freedman therefore warns us in Chap. 1 that deterrence’s efficacy should not be taken for granted, especially not in unique situations when deterrent threats are formulated under time pressure and their credibility is in doubt.

26.1.1 Deterrence—A Fresh Perspective

Michael Mazarr, in Chap. 2, a wonderfully concise primer on deterrence, captures the various familiar conceptual distinctions—general versus immediate, direct versus extended, narrow versus broad, denial versus punishment—but importantly adds that, in contrast to the classical works on deterrence that harped on (nuclear) capabilities, the most important conclusion of his chapter is that “deterrence and dissuasion must be conceived primarily as an effort to shape the thinking of a potential aggressor”. Mazarr argues that in designing a deterrent posture a deterring state should first and foremost understand the “interests, motives, and imperatives of the potential aggressor, including its theory of deterrence (taking into account what it values and why).” This is necessary because the behaviour of potential transgressors is not necessarily the exclusive product of belligerent expansionism. Effective deterrence therefore involves more than mere threats and requires “the nuanced shaping of perceptions so that an adversary sees the alternatives to aggression as more attractive than war”.

26.1.2 Conventional Deterrence

Karl Mueller agrees with that admonition in his discussion on conventional deterrence in Chap. 4. Deterrence is not dependent on war appearing costly or risky in the eyes of the target: it requires that the prospect of war appears worse than the other options, which is certainly not always the case. The potential transgressor’s cost benefit assessment of war is fundamentally shaped by its beliefs about the consequences of its actions, or, in other words, by its subjective expectations. History is rife with cases of misperception and mistaken prediction and decision-makers pursuing courses of action that in hindsight they had been better off not pursuing.

Deterrence by conventional military force has its limitations; it is contestable. The challenger can take defensive measures so that the deterrer will not be able to inflict the damage that it threatens with. It requires substantial force to ensure that costs can be inflicted to translate into coercive pressure. Conventional deterrence is nonetheless selected because often deterrence by nuclear or unconventional instruments is too costly, or deploying such instruments is seen as ‘incredible, unpalatable, or simply inconceivable’. Mueller analytically distinguishes between four conventional deterrence strategies: battlefield defeat, punitive resistance, strategic retaliation, strategic defeat (threatening the opponent with defeat after a prolonged war). In addition to substantial military force, effective conventional deterrence requires robust political will and endurance on the side of the deterrer, to convince the potential transgressor that the threat will materialise in the end. Finally, deterrence may also require making “not going to war look more attractive though reassurance measures or promises of rewards”.

26.1.3 NATO and the Shock of the Old

For the West, the rise of China and the resurgence of Russia has heralded a new era of strategic competition, in which nuclear deterrence has returned to the political, military and academic agenda. The markedly different geopolitical context poses a new set of distinct conceptual, strategic and political dilemmas to Western states and their security organisations, as Sten Rynning argues in Chap. 3. For the North Atlantic Treaty Organization (NATO), deterrence of Russian aggression has made tackling challenges related to power projection, force modernization, and burden-sharing more paramount. According to Rynning, “in addition to its limited muscle, it lacks institutional memory when it comes to joint high-intensity warfare, and faces a political geography that favours Russian interior lines and confounds NATO plans of reinforcement, and discomfort with a new interface between conventional and nuclear deterrence.” It is not good at understanding either Russia’s political intentions or its military capabilities. The rise in nationalism in NATO member states undermines the cohesion of an alliance founded on liberal values. Meanwhile, NATO is still trying to articulate a vision and a concomitant long term strategy for engaging its decidedly non-liberal neighbour. The combination of NATO’s conventional military shortcomings, Europe’s geographical makeup, and Russia’s anti-access area-denial capabilities means that NATO is almost forced to rely on a deterrence by punishment posture by default. The military plan underpinning that posture is prepared but, as we know from traditional deterrence theory, robust capabilities need to be accompanied by clear political will in order for deterrent threats to be credible.

26.1.4 High Expectations: NATO Deterrence and the Baltic States

NATO's challenges, and its search for a coherent deterrence strategy, are explored in the context of the Baltic states where they become tangible by Jörg Noll et al. in Chap. 7. Using a strategic cultural perspective, they explore how the three Baltic states perceive the underlying strategic logic of NATO's Enhanced Forward Presence (EFP) in the Baltics as a deterrent instrument. In Estonia, government documents reflect the official NATO narrative of deterrence by punishment, even if other sources stress the illusion, expectation or aspiration of deterrence by denial. In Lithuania, both documents, officials and experts emphasise deterrence by denial as opposed to deterrence by punishment. Latvia considers the strategy behind EFP as one of deterrence by punishment. The strategic cultures, the history and threat perceptions of the Baltic states explain these differences to a large extent, so the authors argue. In particular, the presence of Russophone minorities in Estonia and Latvia may account for some of the reluctance of these countries to fully embrace NATO's strategy, even though both countries prepare to counter Russia's threat with their allies. If for the US and Western European states NATO's deterrence strategy and its challenges at times remain rather abstract, for the Baltic states, clarity concerning the nature and credibility of the deterrence strategy is an acutely felt requirement and differences in interpretation may undermine rather than reinforce that strategy.

26.1.5 Extended Deterrence

Several other challenges to deterrence stability are discussed in this volume, each a manifestation in its own right of the significant differences between the contemporary geopolitical context in comparison to the Cold War. Paul van Hooft puts the spotlight back again on the political drivers shaping the present and future of the US' extended deterrence posture in Chap. 6. He assesses not only technical and doctrinal developments but also points towards the critical role of economic and political interests, warning that the US nuclear umbrella for its European allies will not necessarily endure into perpetuity given the vastly different strategic circumstances of the 21st century. Van Hooft therefore considers U.S. extended deterrence guarantee to be "precarious"; extended nuclear deterrence has always been "inherently dubious" but increasing uncertainty about the ability of the US to win a conventional conflict at limited costs, and asymmetric interests is likely to further exacerbate that dubiousness. It also suggests that nuclear weapons will be playing a more important role in the US extended deterrence posture.

26.1.6 Nuclear Deterrence, Stability and Arms Control

Alexey Arbatov also looks at extended deterrence in Chap. 5. He complements van Hoof's analysis with an examination of recent trends in Russian nuclear strategy and policy. Arbatov notes that over the past thirty years, the nuclear capabilities of Russia and the US have been significantly reduced both in terms of warheads and in terms of kilotons but the risk of nuclear war is higher than it was at the end of the Cold War. Recent adaptations of the nuclear postures of these two nuclear giants collide with a period of substantial military-technological change. Arbatov describes how the introduction of new effectors and enablers such as hypersonic missiles, space-weapons, cyber instruments, and the integration of AI in nuclear command and control systems poses a formidable challenge to strategic stability. Early warning systems can be either be attacked or fooled by new space and cyber capabilities. The use of sea based missiles can shield the identity of the attacker. Hypersonic missiles make earth based radars irrelevant and significantly shorten the time to respond after detection by satellite systems which are not one hundred percent flawless. This takes place in the context of a polarised US-Russia relationship in which there is little interest from either side to collaborate through confidence building measures and arms reduction treaties. His ominous analysis concludes with a set of concrete policy recommendations for the foundations of a new generation of arms control initiatives to promote strategic stability. Perhaps the most important take away from his chapter is the vivid reminder, coupled with the important warning, that nuclear stability presumes a shared understanding of the meaning of strategic stability and a willingness to invest not only in deterrence capabilities, but also in a stability enhancing mutually agreed upon political framework.

26.1.7 Cross-Domain Deterrence

The emerging era of strategic competition has spawned a stream of literature propagating labels such as hybrid warfare, grey zone competition, new total war, and liminal war. If anything, they are reflective of a growing awareness that actors such as China and Russia, but also Iran and others utilise a wide array of military and non-military activities for coercive purposes. These include economic pressure, disinformation campaigns, inciting political corruption, espionage, providing weapons to opposition groups, polarising domestic debates in target countries, and cyberattacks. Partly in response to this development, and partly in response to the emergence of cross domain war fighting strategies in strict military domains, Western analysts have coined the notion of cross domain deterrence.

Tim Sweijs and Samuel Zilincik assess a recent body of literature on cross domain deterrence in Chap. 8 and argue that it offers plenty of practical insights on how to effectuate measures to deal with challenges related to attribution, threat

credibility and proportionality, signalling and escalation management both in and across domains, but has also engendered innovation on the conceptual front. Their review reveals significant continuities but also significant changes in the insights offered by the cross domain deterrence literature in comparison with the classical literature. They relate that deterrence has been cross domain in character since its inception and observe that the continuities with traditional deterrence literature are indeed considerable. Traditional concepts of deterrence by punishment and denial still feature in the strategic lexicon, while favouring conditions of successful deterrence including the communication of credible threats of cost imposition rooted in robust capabilities and strong political will is also extensively discussed. Yet, the cross-domain deterrence literature also provides a range of new theoretical insights both by reinterpreting and by expanding traditional concepts of deterrence. It employs a more sophisticated understanding of the cost-benefit calculus of deterrence actors that considers identity and social belief systems. It includes both traditional and new military domains as well as non-military domains such as the economic and the information domains. It calls attention to the role of social costs in deterrence by punishment arguing for the important role of norms in deterrence by delegitimation because transgressors will be disinclined from engaging in certain behaviour out of moral conviction or fear that it will result in widespread condemnation. It finally expands the scope from negative to positive incentives through deterrence by entanglement in which transgressors hurt themselves if they harm the deterring actor.

On this basis, they assert that the discussion in the cross-domain deterrence scholarship is more than old wine being served in new bottles. Finally, they conclude that this conceptual expansion of deterrence that involves a wide array of military and non-military instruments which can be used “both as a stick and a carrot, both to compel and to deter, both to persuade and to dissuade”, may well be necessary to deal with today’s strategic challenges, but they suggest that the use of dissuasion as the umbrella term for the wider deterrence by denial and punishment, norms, entanglement, resilience and assurance may be more appropriate.

26.2 Non-Western Concepts of Deterrence

26.2.1 Russia and China

In comparison to traditionally much more straitjacketed and dichotomous understandings of deterrence that prevailed in the West, official Chinese and Russian concepts of deterrence are rooted in much more holistic understandings. These holistic understandings encapsulate elements of both deterrence and compellence, can take place before, during and after war, and cross military and civil domains, as highlighted by Dean Cheng in Chap. 10 and Dmitry Adamsky in Chap. 9.

Starting with an insightful exploration of the etymological Russian roots of deterrence related concepts, Adamsky explains that Deterrence *à la Ruse* stands for “the use of threats, sometimes accompanied by limited use of force, to preserve the status quo (“to deter” in Western parlance), to change it (“to compel” in Western parlance), to shape the strategic environment within which the interaction occurs, to prevent escalation and to de-escalate during actual fighting”. This is different from the Western conceptualisation in which deterrence suggests a reactive approach while compellence a more proactive approach. Strategy is being wrought as part of a permanent engagement, with no distinction between peacetime and wartime. Adamsky uses the term *struggle* to denote the Russian notion of strategic interaction in its totality. The common dichotomy of war versus peace has meaning only in the sense that it signifies the level of intensity of the competition, which is regarded as continuous and takes place before, during and after armed conflict. This logic informs the Russian understanding of deterrence throughout the entire spectrum of strategic interaction including preventing a threat from emerging in the first place whether or not in peacetime, using force in crisis or war, or shaping the strategic environment afterwards.

The Chinese conceptualisation is closer to the Russian than to Western concepts of deterrence, allowing for substantial differences. Referring to official Chinese literature and scholarly analysis, Dean Cheng suggests that the Chinese do not necessarily think in terms of deterrence, as that term is employed in Western strategic literature, but in terms of coercion. Whether an adversary agrees to do something they would prefer not to do, or avoids doing something they would prefer to do, both fit within the Chinese term *weishe*. This term incorporates both compellence and dissuasive aspects. Moreover, instead of regarding deterrence as a goal, in the Chinese conceptualisation deterrence is seen as an instrument. For Chinese decision-makers, Cheng explains, successful deterrence is ultimately a form of political activity and psychological warfare, whereby an adversary is constrained in its actions, allowing China to achieve its objectives. The concept is used to describe signalling and activities both towards and during military conflict, and spans all phases of war. As such, Cheng concludes, the Chinese interpretation of deterrence is closer to the Western conceptualisation of ‘coercion’ in its pre-war and intra-war forms.

In the Russian and Chinese conceptualisations of deterrence, power accrues from the employment of both military and non-military instruments. In that sense, theirs is a multi-domain concept of deterrence that includes nuclear, space, and information means. Moreover, both share the idea that coercive efforts are closely tied to their war-fighting concepts. As Cheng notes, Chinese deterrence capability is “based on the ability to wage real war”, and the structure of deterrent strength is indistinguishable from combat strength, including mounting nuclear strikes. Adamsky in Chap. 9 also explains that in Russian strategic thinking the notion of military victory has not disappeared from nuclear strategy. The linkage itself, by raising issues of crisis stability, enhances deterrent effects. Applying the Western terminological framework to explain Russian and Chinese concepts may thus lead to misperceptions, and mirror imaging invites strategic mistakes.

26.2.2 *Iran*

The Iranian concept of deterrence present another fascinating case that illustrates the limits of classical Western conceptualisations of deterrence and the importance of strategic context and strategic culture. Hassan Ahmadian and Payam Mohseni rightfully highlight a dearth of theoretical work on deterrence in non-western settings in Chap. 13. They explain that the difficulty of understanding Iranian behaviour stems from the fact that the country's strategy is built on a combination of conventional and asymmetric deterrence that incorporates the support of other state and non-state actors. The logic stems from the strategic history of Iran and Syria. Their threat perceptions, the authors explain, have been shaped by a shared sense of regional isolation and a shared antiimperialist ideology. The two countries forged a partnership with the practical objective of deterring regional threats from their main adversaries primarily the United States, Israel, and Iraq under the regime of Saddam Hussein.

Iran maintains a two-pronged deterrence strategy. Its conventional deterrence capabilities are largely rooted in its domestic ballistic missile programme and its capacity to use missiles to hit regional targets (such as strikes in Iraqi Kurdistan and on ISIS positions in Syria). Iran also has asymmetrical deterrence capabilities largely through its support of regional non-state actors, such as Hezbollah in Lebanon, and also through the operational activities of the external branch of the Islamic Revolutionary Guards Corps (IRGC), the Quds Force. The Iranian strategy within the Levant, Ahmadian and Mohseni argue, should be understood as "forward deterrence", defined as the "deployment or possession of deterrent capacity beyond one's own national borders that abut on the adversary's frontier". This strategy does not rely on direct forward deployment of armed forces. Instead deterrence capacity is predominantly provided by partners and allies. For Iran, the strategic function of Syria is to provide it with strategic depth in the Levant and access to Hezbollah. Syria also maintains a combined conventional and asymmetric deterrence strategy against Israel. Combined, the authors conclude, these elements constitute Iran's comprehensive deterrence doctrine in which it uses a diverse and multi-layered assortment of means to defend itself from any form of potential aggression.

26.2.3 *Japan*

The Japanese deterrence strategy is similarly deeply influenced by its history, as Nori Katagiri explains in Chap. 11. Japan's national security resources and institutions are not suited to deter foreign attackers because limitations on Japan's ability to offensive military operations—a necessary factor for deterrence relying on threats to impose costs. Existing restrictions on the use and threat of force stem from post-war constitutional and normative constraints. As a result, Japan's default

strategy is one of deterrence-by-denial which is hampered in its implementation by the inherent limit on its practical ability to deter foreign attacks.

26.2.4 *India and Pakistan*

In Chap. 12 Sander Ruben Aarten demonstrates how deterrence dynamics between two nuclear powers—India and Pakistan—may play out very differently than what classical deterrence theory suggests, once again underlining the notion that deterrence in practice is context specific. Classical deterrence theory argues that the risk of conventional war will diminish when both actors possess nuclear weapons and have a declared nuclear deterrence strategy, out of fear of inadvertently exceeding the nuclear threshold of the other actor. Since both countries openly declared themselves nuclear weapon powers in 1998, India faced the daunting challenge of formulating an effective counterterrorism strategy—deterring Pakistani incursions on the Kashmir region—while remaining under Pakistan’s nuclear threshold. India’s response was the ‘cold start doctrine’. This doctrine involves limited retaliatory advances inside Pakistan by rapidly mobilising infantry and armour before Pakistan’s defensive positions can be occupied. In reaction, Pakistan developed its doctrine of full spectrum deterrence. As Aarten contends, the idea behind full spectrum deterrence is to provide Pakistan with retaliatory options that are commensurate with the intensity of the aggression it faces by linking conventional means with nuclear options on all levels—from tactical to strategic. Strong cross domain dynamics are key features of the subcontinental deterrence landscape as a result. The risk is considerable as Pakistan keeps open the option of a nuclear first-use and India adheres to a doctrine of massive retaliation. Thus, an all-out nuclear exchange may result from a Pakistan-supported militant attack on Indian soil, if both states abide by their doctrines. Yet this has not occurred, as Aarten observes, due to a shared reluctance by both sides to escalate to the nuclear realm. These findings all indicate that nuclear deterrence is less unstable than is assumed by many analysts and scholars, but also that nuclear deterrence can invite circumventing strategies which may result in occasional probes and responses in the conventional domain. The stabilising effect of nuclear weapons may thus not percolate into the conventional domain.

26.3 Deterring Non-state Actors in Non-traditional Contexts

Today’s deterrence literature also exhibits a keen appreciation for the specific requirements for the effective application of deterrence in internationalised intra-state conflict that is so prevalent today against state and non-state actors.

These contexts call for tailored deterrence, as Morgan discussed in 2012. Already during the peacekeeping operations of 1990s deterrence dynamics were at play at the local tactical level, which was again confirmed by counterinsurgency (COIN) operations in Iraq and Afghanistan. Counter-terrorism studies following the Al Qaeda attacks of 9/11 2001 focused on the question whether non-state actors could be deterred. A massive stream of studies dissected terrorist groups, suggesting that tailored deterrence might require specific approaches towards states sponsoring terrorist groups and towards leaders of terrorist groups while other influence methods might be more useful in preventing individuals from assisting or joining a terrorist group. The COIN literature emphasised the importance of mapping the socio-political structure of societies so as to identify those who might actively support the insurgents, who were politically supportive of them, and who might work with COIN units in suppressing them. These literatures—on peacekeeping, counter-terrorism, and counter-insurgency—often remained unconnected and unrelated to deterrence research.

Four studies in this volume address and remedy this disconnect. Eitan Shamir offers a thorough synthesis of research on the deterrence-violent non-state actor nexus in Chap. 14. In an innovative analysis in Chap. 15, Martijn Kitzen and Christina van Kuijk apply it to the COIN context where both insurgents and counter-insurgents vie for control over and support of the population. In Chap. 17, Peter Viggo Jakobsen applies deterrence theory to the context of peace operations where deterrence needs to focus on both state level actors and local non-state actors. Finally, in an imaginative contribution in Chap. 16, Maarten Rothman explores Russia's application of deterrence concepts in the context of preventing separatist or democratic movements to succeed in countries bordering Russia.

26.3.1 Deterring the Threat of Terrorism

In Chap. 14 Eitan Shamir builds on and synthesises a growing body of work on the nexus of deterrence and violent non-state actors. He details how Israel has developed a portfolio of tailored deterrence concepts against violent non-state actors that includes aspects of restrictive and cumulative deterrence aimed at curbing the opponent's ability but also at educating it in a process based approach that envisages a continuous deterrent relationship between the deterrer and the deterred. The consensus opinion held that terrorist groups, in particular those that are religiously motivated, are very hard to deter due to the fact that they present few tangible targets one can threaten, are often not monolithic organizations but consist of a covert network of relatively autonomous cells; there is not necessarily leadership with whom a state can communicate; while their fundamentalist ideologies preclude normal diplomatic negotiations; and the group will see the confrontation as a zero-sum game. The Israeli approach exemplifies a de facto reconceptualization of the meaning of deterrence, which once again corroborates the idea that strategic experience and culture has an important effect on concepts of deterrence.

Instead of conceiving of deterrence in absolute terms, which fails if one terrorist attack succeeds, Israel adheres to a restrictive deterrence approach. First, defensive infrastructure functions as part of deterrence, limiting the chance a terrorist attack will reach its target and achieve the destructive effect it seeks. Second, triadic deterrence involves threatening interests of those states that sponsor the terrorist group. Third, the mere fact that Israel uses force against groups such as Hamas or Hezbollah should not necessarily be considered a failure of deterrence, but as a reminder of Israel's ability to hurt such groups at will. It thereby serves to communicate that certain offensive actions have crossed the limit of violence Israel is willing to accept, thereby re-establishing the norm of what is considered acceptable. Moreover, a deterrent effect is not expected to accrue from symbolic attacks but from repeated strikes, whenever the norm has been violated. This so-called 'mowing the grass' approach also serves to degrade the capabilities and the will of the violent non-state actor. Restrictive and cumulative deterrence against violent non-state actors is therefore inspired more by criminological understandings of the notion than Cold War concepts of absolute deterrence.

26.3.2 Insurgents and Localised Deterrence

In Chap. 15 Kitzen and van Kuijk look at tactical and operational level challenges of deterring insurgents and ensuring support from the local population. They propose an influence continuum in combination with an audience typology and outline different methods to target different audiences that specifically includes non-kinetic instruments, all at the local level where troops must deal with local power brokers—legitimate or otherwise—and the local population. They argue that the popular western heart-and-minds approach overemphasises persuasive methods to influence the population which often fail against the more intimidating authoritarian approach employed by insurgents. Acknowledging that a social environment is made up of people which are friendly, neutral or hostile to the counter-insurgent force, localized deterrence, based on a solid socio-cultural understanding of the environment, flows from a fluid application of influence operations designed to deter undesired behaviour—support the insurgent—and convince the population and local power brokers that the counterinsurgent contingent represents a legitimate and effective presence which will succeed in establishing a lasting secure environment. That array of influence instruments includes soft tools (information), economic incentives, and rewarding cooperation (or the withdrawal thereof), but must also include, more than is generally admitted in Western doctrines, coercive tools, such as empowering rivals of local power brokers and, the use of force against so called irreconcilables.

26.3.3 *Deterrence and Peace Operations*

In Chap. 17 Peter Viggo Jakobsen considers deterrence in another important context that features both state and non-state actors: peace operations. The attacks on Western peacekeeping units in the Balkan in the 1990s prompted scholarly interest in how threats and use of limited force could help deter such attacks and/or compel transgressors to stop them. Peace forces operate in a fluid context in which strict demarcations between deterrence and compellence break down. Jakobsen's *ideal policy* framework lays out the minimum requirements for success to deter and compel transgressors in such an environment. First, a credible threat which is strengthened if the coercer can demonstrate a capability to defeat the adversary swiftly at little cost. Second, a deadline for compliance in order to convince an opponent to refrain or stop attacks or engage in other forms of hostile behaviour in order to create a sense of urgency. Third, assurance that there will be no additional demands following compliance. Fourth and finally, and in line with Mueller's advice, inclusion of positive inducements to reduce the costs of compliance. An important notion, in line with the analysis of Shamir, Kitzen and van Kuijk, is Jakobsen's emphasis that deterrence in peacekeeping operations involves multiple means targeting multiple actors. As he relates, a key lesson from the Balkan conflict was that the international coalition had to deter and to compel "a variety actors on and beyond the battlefield simultaneously". This required coercion tailored to the different actors at multiple levels. In his contribution Jakobsen expands on that lesson and distinguishes four groups of actors that facilitate or frustrate deterrence in peace operations: (1) *combatants* that use force on the battlefield; (2) *combatant allies* that material support to combatants; (3) *combatant supporters* that block action in regional or global institutions; and finally, (4) *bystanders*, from the battlefield to the global level, that fail to act. To succeed, Jakobsen concludes, deterring actors cannot rely solely on threats and use of force but must supplement their use of coercion with persuasion and inducement and devise and implement influence strategies that draw on all three components.

26.3.4 *Deterring Revolts*

Finally, in Chap. 16, Maarten Rothman examines the use of deterrence by president Putin of the Russian Federation against potential democratic revolts. While conceptually perhaps akin to the deterrence challenges explored by Shamir, Kitzen and van Kuijk, Rothman adds to their analyses by looking at the potential for a powerful state to use military threats to discourage popular movements against its puppets and allies. Combining insights from the literatures on democratic revolutions and social movements on the one hand, and deterrence and coercion on the other, Rothman hypothesises that from Putin's perspective two strategies present themselves to discourage or deter democratic revolts: suppression by the authorities

of the affected country and the threat of intervention against the pro-democracy protesters or prospective protesters, either in support of allied regimes during the uprising or as punishment after their overthrow. The target of deterrence experiences both a domestic and an outside threat simultaneously.

This outside threat is a safe guard for Putin for there is a limit to what extent he can rely on domestic repression for this is under the control of the local authorities, Putin's allies, who might take guidance or direction from him but for the most part rely on local resources and personnel. The effectiveness of domestic repression depends on local restraints and sympathies, including those of security services personnel. Their loyalty, Rothman suggests, might waver when they are asked to use violence against the protesters. Russian punishment therefore makes use of local strongmen but also employs Russian operators and usually a sizeable contingent of soldiers. Russia's ability to inflict punishment therefore does not suffer from the same constraints: those enforcing the repression are not compatriots, they are not sensitive to local sympathies, and any defections will not challenge Moscow's authority.

The drawback, as Rothman argues, for this type of deterrence is that democratic revolts are not conducted by a unitary actor but by an emergent collective which only emerges as a collective during the event. Backchannel negotiations and communicating threats is not an option and targeting the population at large might backfire. The deterrent effect however may be retained nevertheless because Russia can hurt democratic protesters in the sense that it can threaten to undermine the revolt's chances to make good on its promise of a better life after the revolt. Moreover, it can sustain the pain by propping up separatist governments, sustaining an environment rife with low-level violence with continued risk of escalation. Such punishment also ensures continued media attention which can be exploited to convey the message that the revolt will fail like previous revolts. As Rothman concludes, it serves Russia's interest, then, to periodically feed the media stories to fuel this narrative by manufacturing an incident. This chapter thus nicely complements Adamsky analysis of Russia's unique conceptualization of deterrence.

26.4 New Instruments and Domains

26.4.1 *Cyber-Deterrence*

In Chap. 20 Stefan Soesanto and Max Smeets, in a very rich synthesis of the debate on cyber deterrence, consider how different scholars evaluate the possibility of deterrence in cyber-space. According to Smeets and Soesanto, as a military concept, cyber-deterrence has at least three different meanings. It can refer to "the use of (military) cyber means to deter a (military) attack [...]; the use of (military) means to deter a (military) cyber-attack [...]; [and] the use of (military) cyber means to deter a (military) cyber-attack". Scholars currently disagree to what degree it is generally

possible to deter an adversarial cyber-attack. One group argues that cyber deterrence functions akin to conventional deterrence. Others believe cyber deterrence features unique issues because cyberspace is markedly different from the traditional domains (air, land, sea). A better understanding of the specifics of cyberspace and the dynamics of deterrence therein is required to explain when deterrence works or fails. According to the third group cyber deterrence is impossible; cyberspace features an abundance of actors all with access to offensive cyber weapons. Moreover, the threshold for offensive actions is low, the number of attacks high and the chance of retaliation slim. Finally, some hold that the strategic value of damage inflicted by cyber-attacks is generally limited and easy to contain and repair. Threats of a cyberattack therefore lack the punch required for effective deterrence.

Proponents of cyber deterrence, Soesanto and Smeets observe, tend to discuss one of the following four deterrence logics, which also appear in the cross domain deterrence literature discussed by Sweijs and Zilincik in Chap. 8: deterrence by denial (which is synonymous to cybersecurity); deterrence by punishment (costs will outweigh the benefits); deterrence by entanglement (interdependence may disincentivise states to launch cyber attacks); and deterrence by de-legitimation (to “raise the reputational costs of bad behaviour, and shrink the battlespace to only encompass military combatants”).

There is no consensus among scholars and strategists in this debate. While cyberspace may have been recognised as a new warfighting domain and constitutes an essential venue for single and cross domain operations, beyond the military utility of cyberattacks and cyber defence at tactical and operational levels, their strategic utility in support of deterrence is as of yet uncertain. One way out was adopted in the US strategy: in an environment of constant contact, a strategy grounded in persistent engagement is considered to be more appropriate than one of operational restraint and reaction for shaping the parameters of acceptable behaviour. This involves a high level of cyber activity to identify and track perpetrators and includes if necessary aggressive cyber operations. This stretches the notion of deterrence beyond the common understanding of the concept. Unsurprisingly, Soesanto and Smeets observe, European policymakers are not inclined to discuss, let alone consider, a strategy of persistent engagement, which is considered to be too aggressive. Moreover, they lack the operational capabilities to operate “seamlessly, globally, and continuously”, which is required by persistent engagement. Theory development meanwhile remains a challenge since politically motivated cyberattacks with strategic impact are few in number, most of the documents are highly classified, there is little access to cyber operators, and existing military cyber organisations are in the embryonic stage. Going forward, Soesanto and Smeets outline four future avenues of research for cyber deterrence: further integration of cyber deterrence in more comprehensive deterrence postures in the context of multi-domain competition; greater focus on technical aspects at the operational and tactical levels; greater emphasis on compellence; and the exploration of novel strategic concepts “to contain and blunt adversarial aggression in cyberspace” outside of traditional deterrence thinking.

26.4.2 *Artificial Intelligence*

Embryonic is also an apt word to describe the development of Artificial Intelligence (AI) capabilities as well as the debate on their potential relevance for security policy, military strategy and deterrence theory and practice, as Alex Wilner and Casey Babb explain in Chap. 21. The limited knowledge base is reason for concern given the high expectations concerning a wide range of fruitful military AI applications including autonomous weapon systems (AWS). But also beyond AWS, they contend, AI will influence defence and security in several important ways. AI will alter the way states plan and conduct military engagements, collect and use intelligence, and protect their domestic national security. Traditional notions of state power are also increasingly intertwined with national expertise and investment in AI. An arms race is thought to be developing between the United States and China as a result.

Wilner and Babb explain the various ways AI is likely to affect coercion: AI may alter cost-benefit calculations by removing the fog of war, by superficially imposing rationality on political decisions, and by diminishing the human cost of military engagement. It may recalibrate the balance between offensive and defensive measures, tipping the scales in favour of pre-emption, and undermine existing assumptions embedded in both conventional and nuclear deterrence. AI might altogether remove human reasoning and emotions from the practice of coercion. It may provide users the ability to collect, synthesis, and act upon real-time intelligence from several disparate sources, augmenting the certainty and severity of punishment strategies, both in theatre and online, thereby compressing the distance between intelligence, political decisions, and coercive action. AI enhanced drones may be employed to swarm and overwhelm the defences of opponents, or, alternatively, offer a fail-safe automatic response option during escalation.

As a result, AI may quicken the overall pace of action across all domains of coercion, in conflict, crisis, and war. These factors may lead to ‘hyperwar’, they conclude, in which data will be filtered and analysed in near or real-time providing decision-makers with a greater awareness and more options far more quickly, but also result in higher risks for inadvertent escalation and—lured by the illusion of certainty and superiority—in risk-seeking behaviour. Currently this topic still belongs to the realm of speculation. The actual study of AI and deterrence and coercion has only just begun. Military AI enabled technologies are immature yet their consequences for deterrence can be expected to be significant. As military AI applications will materialise and be more fully integrated by defence organisations, AI deterrence theory will be informed by empirical analysis.

26.4.3 *Sanctions*

Sanctions are another instrument of direct relevance to deterrence strategy yet they have often been discussed in a different body of literature, despite the fact that threatening with and/or imposing a sanctions regime often has deliberate coercive purposes (signalling, constraining, compelling) and such sanctions regimes precede and surround subsequent steps to boost the deterrent signal with military threats. Sanctions, as Francesco Giumelli explains in Chap. 18, are supposed to inflict pain on the receiver, and the logic goes that such economic pain would translate into political gain, such as deterring the repetition of certain behaviours and the escalation of conflict. In addition, sanctioning a target shapes the expectations of other actors (or potential targets in the future) of the implications of certain activities.

During the Balkan crisis of the 1990s and Western campaigns against Libya and Iraq, comprehensive sanctions targeted entire economic sectors with disastrous humanitarian consequences. Moreover, sanctions were counterproductive as the real targets managed to either avoid the impact of sanctions or were, occasionally, even strengthened by them. Serbia for instance benefited from the arms embargo as they had control over a sizeable military arsenal. In Iraq, the population suffered the brunt of the embargo while Saddam Hussein continued to live in affluence. Subsequent research has indicated that different types of regimes—democratic or authoritarian—have different vulnerabilities and display different responses with authoritarian regimes at least in theory being more vulnerable to sanctions that hurt specific personal interests of the leadership. These insights coupled with detrimental effects of previous sanctions prompted scholars and practitioners to envisage targeted sanctions. Targeted sanctions include restrictions on freedoms for individuals and non-state entities as well as asset freezes and financial restrictions.

While potentially more effective than comprehensive sanctions and less prone to produce counterproductive side effects, Francesco argues that targeted sanctions also present new features complicating deterrence efforts. First, targeted sanctions frequently target individuals, and individuals behave according to different logics in comparison to complex organizations such as states. Moreover, individuals have human rights, which constrains the feasibility of targeted sanctions because sanctioning individuals requires evidence to be presented, indicted individuals need to be brought to court, and procedures to rectify mistakes made by listing authorities need to be in place. Second, while classical deterrence is based on the promise of serious damage to be inflicted, targeted sanctions are designed not to inflict lethal pain on their targets. Third, according to Giumelli, targeted sanctions can increase the likelihood of the behaviours that they intend to discourage as they present a problem of moral hazard; one party to the conflict might be incentivized to provoke a conflict if it expects that targeted sanctions would be imposed on the other side. Finally, sanctions today are used for a very long list of objectives in a variety of crises, from international terrorism, to non-proliferation, conflict management, post-conflict reconstruction, but also asset recovery as well as combating organized crime and human trafficking. “The over-utilization of sanctions”, he concludes,

“and their apparent light impact could undermine, rather than strengthen, an international criminal deterrence doctrine”.

26.4.4 Resilience

In Chap. 19 Cees van Doorn and Theo Brinkel explore another instrument for boosting deterrence: resilience. Resilience has gained increasing attention following awareness of the potency of hybrid threats to disrupt the integrity of economic, social and political structures in Western democracies. Hybrid warfare opens the possibility to use all instruments short of actual war. Disinformation campaigns, that exploit social media, have been salient instruments. Spreading fake news as well as fuelling alternative narratives are part and parcel of attempts to dislodge Western democratic societies and undermine the morale of the population.

Resilience—the ability of individuals, communities, or organizations to prepare for disruptions, to recover from shocks and stresses, and to adapt and grow from disruptive experiences—has come to be considered a key pillar of deterrence against hybrid activities for multiple reasons. First, because it is impossible to defend against all threats societal resilience negates the benefits to be derived from any attacks. Second, acknowledging that effective deterrence typically depends on strong defence capabilities matched with equally credible political resolve, in the context of information warfare, credibility is also a decisive denial capability weapon. As Brinkel and van Doorn assert, veracity, consistency and respect for the truth are the exact opposite of disinformation campaigns and contribute to what has been described as deterrence by delegitimization. Resilience usually concerns technical solutions and infrastructure but resilience can also be found in attitudes, declarations, and images. It manifests itself in common values and objectives. Resilience is therefore a quintessential part of the social capital and trust in society and results from good governance, human rights and freedoms, as well as the rule of law.

Van Doorn and Brinkel use the aftermath of the downing of flight MH17 to explore how resilience has functioned as a deterrent to subversive Russian disinformation activities. They examine counter-measures (creating credible narratives, nuanced messaging, careful fact finding) implemented by the Netherlands government and analyse how these affected societal trust in reaction to disinformation activities. The Dutch government’s narrative has consistently focused on three courses of action: bringing the victims home, establishing the facts about the circumstances in which the plane went down, and holding to account those responsible in the court of law while respecting the independent position of others, such as the Public Prosecution Service and the free press, in their search for the truth. Other sources of information, such as free independent news networks and digital forensic networks have been paramount in discrediting disinformation and allowing the public to reach its own conclusions. During the prosecution process, civic journalists played an important role in disclosing the exact route of the BUK missile

system entering and leaving Eastern Ukraine. As a result, Russian alternative narratives explaining the cause of the downing and deflecting the blame for it have not been able to gain any real foothold in Dutch society.

26.5 Decisions, Decisions

26.5.1 *Game Theory, a Re-appraisal*

The cool and perhaps even cold-hearted idea that game theoretical calculus should be the basis of deterrence strategy and inform decision making processes during a nuclear crisis has inspired much critique and resulted in a wave of research exploring how decision making works in reality. In Chap. 22 Roy Lindelauf nevertheless fruitfully reminds us of the utility of game theory, and argues for continued attention to it, also in light of the emergence of AI. Commonly used game and decision theoretic models fail to explain the empirics of deterrence and, as Lindelauf asserts, this has unjustly led many theorists to criticize the (rationality and other) assumptions underpinning of such models. Game theorists readily admit these models do not represent an accurate model of complex and varied decision making situations but merely describe what a decision maker *ought* to do in a given situation. As Lindelauf reminds us, “all models are wrong, but some are useful”. Game theory can help to lay an axiomatic foundation under the theory of deterrence. Moreover, algorithms are entering each and every aspect of our lives including the command and control of weapon systems. Lindelauf expects that these systems will deploy game- and decision theory based algorithms to coordinate and control. Such AI and autonomous systems have the potential to dramatically affect nuclear deterrence and escalation and the fact that the nuclear deterrent decision-cycle will also be based on algorithmic analysis makes it paramount that we need to further develop game theory in the context of both the theory and the practice of nuclear deterrence.

26.5.2 *How the Mind Plays Games with Rationality*

Our understanding of targets’ perceptions of deterrence and their reception of deterrent signals is deepened by the contributions by Tom Bijlsma (Chap. 23) and Samuel Zilincik and Isabelle Duyvesteyn (Chap. 24). Their contributions explore *terra largely incognita* by opening up the black box of the human psyche and concentrating on the role of emotions in deterrence, both on the part of the deterrer and on the part of the deterred. As Tom Bijlsma notes, research in the third wave, capitalising on new insights from the psychological, economics, and decision-making literature, indicated that decision making in reality deviated

substantially from the assumptions of the rational actor model. Apart from organisational and political interests, processes, routines, and group think, deterrence may fail because of misperception on either or both sides of the crisis. Bijlsma takes us on a tour along the causes of such misperceptions; the heuristics (rules of thumb) and biases (systemic errors such as inclinations or prejudices) that the human mind most often unconsciously employs as short-cuts to rationality, which colour the incoming stream of information and the processes to digest it and come to a decision.

Because of anchoring humans rely heavily on the first piece of information offered when making a decision. The confirmation heuristic reflects the human tendency to seek information that supports one's existing point of view and neglect or ignore signs that can lead to contrary evidence. The availability heuristic refers to the mental shortcut in judgments about the probability of events based on the ease with which examples come to mind. Improbable events are excluded from decision making processes. The representativeness heuristic compares a situation with mental models in our minds. Stereotyping and profiling are forms of this heuristic. The affect heuristic represents the fact that humans tend to be more positively inclined to what they like. The related fluency heuristic explains the fact that the human mind tends to give preference to an option if it is processed faster or more fluently than an alternative option. In other words, the more elegantly an idea is presented, the more likely it is to be considered seriously, irrespective of whether or not it is logical.

An important issue for deterrence research and strategy concerns the question how leaders deal with risk. Prospect theory explains that humans evaluate the potential value of losses and gains differently. In contrast to rational choice theory, prospect theory finds that decision makers are apt to overweight losses with respect to comparable gains, and tend to be risk averse when confronted with choices between gains while risk acceptant when confronted with losses. That explains perhaps why it is easier to deter an actor from starting an invasion than to compel him to retreat from territory it gained. In short, applied to deterrence dynamics, the result is that leaders are inclined to take more risks to maintain their positions, reputations etc., than they are to enhance their positions. The higher the stakes, the higher the risk of being caught in a psychological trap as Bijlsma concludes.

26.5.3 The Emotional Turn in Deterrence Theory

In Chap. 24 Samuel Zilincik and Isabelle Duyvesteyn continue further down this path by surveying recent insights concerning the role of emotions in decision making processes and assessing their relevance for deterrence theory. Their findings suggest that emotions give new meaning to deterrence by changing the nature of deterrence theory and by highlighting problems of practice. Emotions are not only the consequences of the defender's actions; they emerge through the challenger's interpretation of the situation and, once triggered, specific emotions affect cognitive

processes and action (or inaction) in far more sophisticated ways than has been assumed. Emotions are responsible for different kinds of biases that affect decision-making and judgments. They affect perceptions and, therefore, change how individuals perceive the world. Similarly, emotions and stress interact in dynamic ways. Anger, for example, is a negative emotion, similar to fear. However, while fear tends to make people more risk-averse and pessimistic, anger tends to make people feel risk-prone and optimistic. Furthermore, the behavioural influence of emotions varies from one context to another. Fear, for example, can motivate freezing, fleeing, or fighting. Happiness can motivate both the relaxation of efforts and their pursuit, depending on whether the emotion is experienced or merely anticipated in the future. Relating these insights to deterrence, they assert that emotions in different configurations shape decision making processes. Emotions are, in fact, essential for any decision, rational or not, as emotions make decision-makers care about the consequences of their actions, which in turn enables them to choose from competing objectives in any given context. However, the varied and sometimes contradictory influence of specific emotions makes deterrence without a better grasp of their impact an uncertain endeavour. Zilincik and Duyvesteyn therefore argue that emotions need to be taken seriously in future deterrence research because it will allow for a more nuanced understanding of the micro-level causal mechanisms that explain how deterrent threats are perceived and interpreted by targets of deterrence of different strategic cultures and different psychological makeups. They thus conclude that deterrence is “the continuation of emotional life with the admixture of violent means”.

26.5.4 The Legal and Governance Side of Effective Deterrence

Finally, in Chap. 25, Paul Ducheine and Peter Pijpers address two related and relatively neglected issues in deterrence research: first, the legal framework applying to the use of deterrence instruments and, second, the intragovernmental arrangements which facilitate coordinated deterrence strategy. Effective deterrence by Western democracies, especially in the context of deterring hybrid threats, requires that robust capabilities and political resolve, which are clearly communicated, are complemented with a legal framework that is a prerequisite for deterrent power because it provides a variety of responses with a firm legal basis. The effective orchestration of actions during a crisis, as Ducheine and Pijpers argue, requires prior identification of the roles and responsibilities of different governmental departments (e.g., the ministry of foreign affairs, defence, finance) and a shared understanding of the potential effects associated with various potential instruments. Moreover, as they illustrate in a description of the legal prerequisites, such intergovernmental arrangements require clear demarcation of legal authority of each of the departments, and clarity of the appropriate international and national

legal frameworks. Deterrence against hybrid threats will be ineffective absent the clear allocation of responsibilities and legal frameworks because governments will simply be unable to carry out credible counteractions in time. Considering that the Cuban Missile Crisis is the landmark case study that highlighted the ways in which organisational interests and politics can influence deterrence strategy in practice, the relative lack of research into the governance of security these days seems strangely at odds with the demands of cross domain deterrence.

26.6 A Renaissance of Deterrence Theory and Practice

This volume took Patrick Morgan's 2012 analysis concerning the '*State of Deterrence in International Politics Today*' as a point of departure starting from the premise that recent geopolitical and technological developments may have moved deterrence research beyond Jeffrey Knopf's fourth wave. As has become evident from the state of the art overviews of recent insights contained in the twenty-six chapters in this volume, contemporary deterrence theorising and practice is experiencing a true *renaissance*. New theoretical and practical concepts on how to effectively deter different actors within and across domains are being put forward. In the context of considerable military-strategic change these insights are put to test, exhibiting a fruitful but also relatively swift accelerated interaction between theory and practice, akin to other historical periods that featured similar paces of military-strategic change such as for instance the late 1950s.

Contemporary deterrence researchers seem also to finally heed the oft-repeated calls in the deterrence literature, including those by Michael Mazarr in his stock-taking of contemporary deterrence research in this volume, to take context and actor perceptions seriously. As such, there is a growing body of literature that really does differentiate between specific context related challenges while paying ample attention to tailor made solutions.

It is also increasingly acknowledged that contemporary threats may well require strategic concepts that exceed the analytical scope of strict deterrence. In our digitally wired world instruments to inflict harm have proliferated to a greater number of (state and non-state) actors. Today's threat universe features novel opportunities to project power as well as new vulnerabilities to tools of power projection. The multiplicity of actors and the sometimes opaque nature of threats further complicates deterrence. This, in combination with new insights from psychological and decision-making research into how the human psyche operates, leads many authors to observe that deterrence should be complemented by other approaches that include compellence and suasion.

At times, there is conceptual creep with the meaning of deterrence stretched far beyond its limits. At other times, it is plainly pointed out that deterrence should constitute one strategy in a broader portfolio of strategies and that the neat theoretical categorisation of strategies is absent in practice where strategies can flow into each other. The demarcation of categories—when does deterrence stop or fail, when

does a symbolic demonstration of force to boost one's credibility start to resemble a brute force approach—is fluid. As Byman and Waxman noted in light of the experience of coercive diplomacy in the 1990s, and confirmed here by Mazarr, Jakobsen and Shamir, compelling a halt can be described as deterring to advance further.⁵ Moreover, symbolic uses of force should not necessarily be considered a sign of deterrence failure, but as a method to bolster deterrence.

In addition to the elaboration of new concepts of deterrence, existing concepts are scrutinised more closely and refined accordingly. It is increasingly acknowledged that there are other non-Western approaches to deterrence, that in some respects may be fundamentally different. The contributions to our volume demonstrate that there is a real appreciation for the fact that strategic actors conceptualise deterrence differently, and, as Dmitry Adamsky amongst others relates, perhaps do not recognise deterrence as a distinct strategic concept with its own logic at all.

Taking stock of the body of insights that have emerged over the past, we submit that the considerable pace of military-strategic innovation of the past two decades has been accompanied by the blossoming of deterrence theory and practice building on the approaches to the study of deterrence that emerged during previous waves. It has shed its predominantly state based nuclear and conventional deterrence focus characterised by deductive reasoning encapsulated in game theoretic models (1st wave). It continues to feature plenty of case work and some, albeit far fewer, large-N approaches (2nd wave). It fruitfully incorporates insights from other academic disciplines (3rd wave) including psychology, communication and signalling theory, which are applied in the context of asymmetric deterrence against non-state actors (4th wave), but also against state actors, in and across new and old domains, and before, after but also during war. The current deterrence literature is less concerned with large-N hypothesis testing shedding some of its political science aspirations. Instead it relies on more general theorising based on the examination of the dynamics of particular cases in line with a disciplinary approach more prevalent in strategic studies. We therefore submit that a fifth wave of deterrence theory is in fact emerging even if it is in its early stages (see Table 26.1).

The nascent fifth wave is characterised by relatively short feedback loops between theory and practice in a reciprocal relationship that runs in both directions: theoretical ideas about how to deter are transferred and tried out in the real world at the same time as deterrent practices from a specific context and domain are studied, generalised, and theorised to also be useful in other contexts. In addition, there is ample attention to the practical prerequisites for favouring conditions of effective deterrence that go beyond more generic precepts and address more context specific elements. This is thus one particular area in which there are actual attempts to bridge that famous gap between theory and practice.

In addition to these strengths there are certainly also gaps, weaknesses and potential pitfalls with the fifth wave. First, similar to previous waves, today's

⁵Byman et al. 1999.

Table 26.1 Five Waves of Deterrence Theory (*Source* The authors)

Wave	Central question	Features
The 1st wave (1940s)	What is the effect of the atomic bomb on international stability?	Exploratory analysis; nuclear domain; great power centric; bipolar system; outside of war
The 2nd wave (1950s–1960s)	How to defend national security, attain limited political objectives but also control the horrors associated with nuclear war?	Deductive analysis; game theoretic; operational modelling; nuclear and conventional; great power centric; bipolar system; outside of war; status quo and stability oriented; mirror imaging and assumption of unitary actor rationality
The 3rd wave (1970s–1980s)	How to strike a proper balance between conventional and nuclear forces?	Empirical; psychological and decision-making perspectives; historical case studies; large-N approaches; nuclear and conventional domain; great power centric; bipolar system; outside of war
The 4th wave (1990s–2000s)	How to deter non-state actors and rogue leaders?	Empirical; multidisciplinary; psychology, terrorism studies; historical case studies; conflict domain; non-state actor centric; unipolar system; outside of war; application in peace keeping context; incorporated in wider debate on coercive diplomacy and the dynamic relationship between deterrence and compellence; deterrence failures; debate on the utility of precision weapons for conventional deterrence; military theorising on most effective coercive mechanisms in peace operations to deter and if necessary to compel
The 5th wave (2010–onwards)	What does the deterrence of composite challenges look like?	Partly exploratory, partly empirical; strategic studies; multidisciplinary; perceptions and context; insights from criminology, cognitive sciences and sanctions literature; all domain and cross domain, civ and mil; all actor centric; multi-polarity; inside and outside of war; non-status quo orientation; impact of novel technologies

deterrence literature continues to grapple with how to conceptualise and examine decision making by deterrence target actors. The literature typically fails to properly delineate the deterring and deterred agents—in the person of the individual political leader, in a larger group of decision makers surrounding him, or in a hypothetical unitary state construct. As a result, there are few attempts to subsequently

empirically study agents' decision making processes and the perceptions that inform them. In many cases the agent is largely left unspecified with authors paying lip service to the issue but implicitly relying on a hypothetical unitary state construct. In a similar vein, there are few in depth process tracing studies that scrutinise the decision making of both the deterrer and the deterred and establish whether deterrent signals were both sent and understood.⁶ This is a key issue in determining the actual efficacy of deterrence because it is both unclear whether there is a deterrent relationship in the first place,⁷ and, should there be one, there is no recorded empirical evidence to corroborate the causal mechanisms through which deterrence works. The empirical base underlying the purported efficacy of deterrence in particular domains is therefore thin.

Second, and related to this point, from a research perspective, the situation is certainly not helped along by the emerging fifth wave's tendency to conceptually expand understandings of deterrence to encompass a wider variety of functions, including compellence and suasion, because the use and utility of concepts that lack strict delineations of their scope are even harder to ascertain empirically. Meeting the full spectrum of today's strategic challenges certainly requires more than threats that rely on the denial of direct benefits or the prospect of unacceptable imposition of costs. Fundamental features of today's strategic environment which include a greater number of actors and effectors, larger attack surfaces and vulnerabilities, ambiguity and opaqueness, and complex relationships, necessitate comprehensive responses that utilise a broad portfolio of strategic ways and means. The empirical examination of the efficacy of these responses, however, benefits from conceptual clarity about what is being analysed in the first place.

Third, deterrence in newer domains including cyber, space but also where it concerns information or economic pressure campaigns, requires a solid grasp of the finer technical details of the possibilities as well as the limitations in order to be able to make sensible judgments about the feasibility of deterrent concepts that are being proposed. If the disconnect between the knowledge possessed by strategists and specific domain technological subject matter experts grows, deterrence theorising risks becoming not only hollow but also meaningless. Deterrence scholars therefore need to combine strategic expertise with in depth understanding of the intricacies of particular domains in order to continue to make meaningful contributions to the study of deterrence in the future.

Overall, from a philosophy of science perspective, the deterrence research programme in its current incarnation seems to be a blossoming field that continues to expand and grow. At the same time, it is—in Lakatosian terms—neither progressive nor degenerative,⁸ but does risk to remain on the surface if it continues to ideate and explore but does not start specifying the deterrent mechanisms and examining how these work empirically. Even if it is a healthy sign that, in times of

⁶Like for instance Lebow and Stein did for the US-Soviet deterrent relationship, see Lebow 1995.

⁷See also Lebow and Stein 1990.

⁸Lakatos 1999.

considerable military-strategic change, deterrence research is evolving along with it both in terms of its focus and content, it will need to move beyond the ideation and exploration phase. That in turn will require a concerted and cross disciplinary effort by strategists, historians and political scientists, amongst others, to borrow from each other's research methods, and a willingness to harvest insights from other more distant but relevant disciplines such as cognitive sciences, communication studies, human decision making, science and technology etc.

In this volume, we have tried to facilitate cross-disciplinary pollination bringing together insights from a range of fields including strategic studies, intelligence studies, military operations, political science, psychology, biology, mathematics, science of technology, history and law. We submit that the field of deterrence research will benefit from more collaborations of this kind. This necessitates that larger structural hurdles are overcome. At present, there are no real incentives for scholars to engage in extended cross disciplinary research even if there are relevant and shining examples of how especially strategic studies and political science have advanced as result of it.⁹ For researchers working in the latter two categories it is typically not in their professional interest to devote too much of their sparse professional time interviewing decision makers and doing archival research. Historians, in turn, are more likely to look at specific conflicts or relationships rather than trace more ephemeral strategic concepts such as deterrence. But reality is not destiny. This can be changed. Career incentive structures can be adjusted, and new funding schemes can be established to engage in real cross disciplinary collaboration. This in turn will also be very useful for practitioners and the defence and security community who will benefit from being able to draw on empirically proven concepts.

This then spells out the future research agenda for deterrence. Attempts to explore and adapt concepts to the changing character of challenges will continue be necessary in times of rapid military-strategic change, which is not expected to slow down any time soon. Alongside conceptual exploration and adaptation, it is necessary to start putting these adaptations on firmer empirical grounding in order to replace high level maxims such as *use unambiguous threats* and *signal consistently* with actual assessments of what works in particular contexts and domains based on multilevel scrutiny and in-depth case study. Such in depth case studies lend themselves to subsequent comparative case study work. This can perhaps be followed later on with larger-N work that seeks to unpack both the outcomes at the macro level, the dynamics at the microlevel, and the meso mechanisms that transfer these from the microlevel level to the macrolevel and back, in the recognition that the practice of deterrence as a strategy is partly an art, albeit one that can and should be studied scientifically. Whether this will happen will—as always—depend on intellectual curiosity, scholarly persistence and critical debate, but will be helped

⁹Think for instance how Marc Trachtenberg's analysis of audience costs in historical case studies marked a caesura in the political science and strategic studies research dedicated to abstract theorising about the role of audience costs. See Trachtenberg 2012.

along if the right academic and professional incentives structures are put in place. We look forward to the further maturation of the fifth wave of deterrence literature.

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