



Wilton Park



Image: NATO Defense College

Conference report

Connected forces, educated minds: transformation and professional military education

Monday 13 – Wednesday 15 May 2013 | WP1225

In association with:



Defence Academy
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Key points and recommendations

The essential dilemma of professional military education (PME) is that it supports shrinking institutions dealing with bigger issues over great time and distance, requiring ever more complex partnerships to succeed in difficult missions. Three specific strategic challenges face PME: the setting of goals for education, training and research in a shifting strategic environment; the relationship between PME and the rapidly-changing civilian academic market, which in turn raises profound questions about academic freedom and access to top-quality civilian expertise; and the growing gap between the generation and use of technology in education and training. History suggests that it is precisely at such hard economic times that education should be seen as a key enabler of the human capital that is the comparative advantage of NATO militaries. The transformation of armed forces must be linked to the transformation of PME. Instead, across the Alliance PME is being systematically cut as the medium to long-term is abandoned in favour of the short-term.

There are balances to be struck between education and training, the war-fighter and the wider security community, and the national and the international in PME. However, there are no insuperable barriers to strategic unity of effort and practice in PME if sufficient will can be generated to inform a much needed Alliance defence education vision. Indeed, making smart defence smarter should be the daily mantra of all concerned in the Alliance with delivering an outcome-based, learner-focused system of education and training. Education and training must be seen as part of a holistic whole. Education merely provides the context for training.

Education will vary according to level and capability and be tailored to support careers that specialise in many security domains. For example, at the mid-level education will produce “brilliant mechanics”, whereas at the higher-level it will reinforce “strategic level intuition”. The PME system must be agile enough to recognise early and support “the likes of a Petraeus or Stavridis” as well as more modest mortals. Critically, central to PME will be a tailored, career-long learning relationship that can identify early talent and foster an elite of officer-scholars, some of whom are sent off for a time into the civilian education sector with no suggestion that their careers will be blighted as a result.

Advanced distance learning (ADL) will be an essential part of future PME as will other technologies currently informing the revolution in civilian education. Consequently, the balance between residential and remote course is likely to change. However, an essential paradox must be confronted to exploit both technology and the information to which it affords the learner access; as academies are cut the greater reliance on ADL could generate demands for increased access to information to service online learning that will simply prove beyond reach. PME could then be reduced to a kind of defence Wikipedia – strong on information, uncertain on quality. However, perhaps the real challenge is to convince commanders of the value of learning and thereafter that time should be invested in it.

Given the nature of emerging security challenges and the austerity which is the ‘pot-mark’ if

not hallmark of this age, no single actor can afford or guarantee security or defence. That is why a community such as NATO exists. And, whilst much of the PME effort will take place at national level it is precisely those communities able to champion strategic unity of effort, purpose and knowledge in this age that will prevail.

NATO consequently has a leadership and facilitation role to play by highlighting best PME practice across the Alliance and helping to set standards for PME, including on the use of new technologies. Specific attention should be made to ADL and all aspects of synthetic education and training, with a focus on elite senior education and training to expose military leaders to diversity. ACT could act as the focus/intelligent customer for critical peer reviews.

Any attempt to impose a PME template from above across the education and training domain will likely fail as such an effort will not overcome national cultural, political and ethical barriers. However, critical to future PME will be the systematic linking of education, training, exercising and research as part of a new defence education vision with NATO acting as both a 'clearing house' and best practice consultancy. ACT should lead in the creation of this defence education or PME vision that could establish the benchmark for proving relevance and for ensuring that PME is firmly-embedded in NATO's Smart Defence and the Connected Forces Initiative. The following concepts and action points should be taken into consideration with regard to the creation of an Alliance-wide PME vision:

- It is important that NATO nations take a long-term view and consider what education and training the officer and non-commissioned officer will need twenty years hence. Allied Command Transformation (ACT) should thus focus its efforts on helping nations to shape the future of PME
- "Transferability" is critically important and to that end NATO should assist in the aligning of PME with international civilian educational standards, such as the Bologna process in Europe. The establishment of quality assurance standards would help ensure that PME qualifications are recognised internationally. The creation of indicative NATO Educational Standards might help as well to foster common educational goals and standards at the strategic and operational levels.
- The focus should be on the needs of the learner. Equally, given the nature of the "profession of arms" there is a critical need to ensure that the learner receives the requisite knowledge to succeed at the appropriate level of command, especially as "mission command" creates more decentralisation of command. A firm and structured link should be established between lessons-learned and PME.
- PME will need to be more tailored to individual career development and measured and assessed as such. It might be useful to create a "matrix at ACT showing what countries are doing in terms of policy, institutions, programmes and curricula".
- A first step would be a mapping exercise to examine just what subjects are taught across the Alliance to see if some subjects could be taught internationally or by clusters of like-minded nations. This would help NATO nations better understand what if any consolidations of both institutions and programmes could be made.
- The major study of the Carnegie Foundation for the Advancement of Teaching regarding the educational practice of a range of professions could inform a similar study into the future of PME.
- Demonstrating and measuring success is to a large extent linked to the willingness of PME systems to allow failure. In too many PME institutions the people who work hard and those that do not receive the same qualification. This tends to reinforce the belief that PME courses are too often rubber-stamp exercises to legitimise promotion.
- Transnational PME should be focussed on the elite 25% of officers who are likely to

achieve high command of coalitions. Given that contemporary coalitions will likely be comprised of both military and non-military actors, this elite will need to be educated in a multinational and multidisciplinary framework that is designed to make them look up and out and avoid the parochialism of national military stovepipes.

- Innovative approaches should be closely evaluated for wider application. A case in point is the Danish advanced distance learning initiative.
- PME needs to exploit better the revolution in civilian use of education technologies. What new concepts and technologies exist and what can be “bought off the shelf”?
- Technology and modularity go hand-in-hand. However, the relationship between technology, tailored and blended learning, and programmes needs to be better understood. The US has undertaken an Advanced Education Research Initiative to tap into the civilian revolution that builds on the Joint Staff Directorate for Joint Force Development (J7) Review of Joint Education in support of National Defense University (NDU) 2020. This kind of initiative might be adaptable to NATO-wide PME.
- To some extent distance learning will organise itself as “information docking stations” that promote a best practice debate between commissioned and non-commissioned officers. Sites such as “companycommander.com” have become an essential if informal part of continuous learning, not least because it is also open to former officers. One idea is that NATO may wish to create an “admiralgeneral.com” to promote a similar debate at senior command level.
- External validation and performance-measuring of both education and training is critical to the measuring of success. In many NATO nations such reviews are conducted by civilian education professionals. It is also vital that comparisons are carried out on a regular basis with peer institutions in NATO nations and beyond. ACT clearly has an important role to play in such a peer review, possibly in conjunction with the NATO Defence College.
- The real challenge is to convince commanders of the value of learning and thereafter that time should be invested in ADL. One approach may be to audit the amount of total time spent on education and ensure that total learning time does not change even if a shift to ADL takes place. Equally, there seems to be strong support for the view that ADL cannot replace personal interaction but must rather be seen as in support of it.
- For smaller NATO nations the PME challenge suggests the need for a careful understanding of what can be produced in-house and what consolidation might be sought either through partnerships with other institutions or clusters of nations. The Baltic Defence College was highlighted as a possible model for future synergy.

“ The essential dilemma for professional military education (PME) is that it supports shrinking institutions dealing with bigger issues over great time and distance requiring ever more complex partnerships to succeed in difficult missions.”

The Strategic Challenge for Professional Military Education

“Investment in Minds”

1. The aim of this conference was to consider the role of PME both at the NATO level and within NATO nations as governments grapple with reduced defence budgets. There is also a pressing need to preserve strategic and operational lessons from operations in Afghanistan to ensure they inform programmes and curricula. Three specific strategic challenges face PME. The first concerns the setting of goals for education, training and research in a shifting strategic environment. Indeed, critical to future PME is the systematic linking of education, training, exercising and research as part of a new defence education vision. The second concerns the relationship between PME and the rapidly-changing civilian academic market, which in turn raises profound questions about academic freedom and access to top-quality civilian expertise. The third challenge concerns the growing gap between the generation and the use of technology

in education and training.

2. Since 2009 NATO has been trying to develop a “holistic approach” by aligning PME to horizon-scanning scenarios established by the Multiple Futures Project. Building on that, Allied Command Operations (ACO) suggested setting education and training goals in collaboration with NATO Headquarters. Within the broad framework of the Connected Forces Initiative NATO has created a “clearing house”, which is itself established on three critical elements: global programming (outreach to other institutions such as the African Union, EU, UN), training management reinforced by a Training Requirements Analysis designed to identify gaps and standards, and a Requirements Authority that can support properly designed programmes and curricula. However, more support is needed from the NATO nations if the requirements are to be better informed. Transparency is critical and to that end the Alliance has made both strategy and materiel available to the public domain.
3. “Transferability” of standards and qualifications is also critically important. NATO is seeking to align PME with international civilian educational standards, such as the Bologna process in Europe. This would ensure that qualifications are recognised internationally by harmonising educational goals and standards and by establishing a common approach to quality assurance.
4. Whilst responsibility for PME remains national, a partnership is envisaged by which key aspects of education and training, such as gender and civil-military co-operation (CIMIC), could be set at the Alliance level. However, two critical questions still need to be addressed: what is the role of PME in preparing military leaders and what is the priority of education?
5. History demonstrates that it is precisely at such hard economic times that “investment in minds” should be a priority. Knowledge is a key enabler of human capital, which remains for the moment a comparative advantage enjoyed by NATO militaries. NATO nations have cut PME budgets by some 30% since 2008, forcing the Alliance to take a holistic view of PME that has already provided some compensating benefits. However, the sharp cuts in PME across the Alliance increase the need for more co-ordinated approaches.
6. During such straitened times PME must demonstrate value for money. That in turn means rigour over the choice of both the educated and educators as well as that both programmes and curricula demonstrate relevance.
7. The focus of PME should be on creating leaders able to make strategic decisions and solve complex problems with the emphasis therefore on practical education. Moreover, a successful academy must necessarily involve diplomats, intelligence professionals and non-governmental organisations given that so much military action takes place within a broader security context. Indeed, ‘outreach’ is critical to the identification of best practice.
8. The balance to be struck between preparing the war-fighter and wider security operations is a tension that informed the whole conference and will remain a judgement that will need to be made, as will the relationship between training and education. Whilst there was broad agreement that there is, “training in education and education in training” there are two distinct viewpoints. One view sees the distinction as between “education which teaches one to think and training which teaches one to do”. However, another view sees this distinction as “unhelpful” and that the more useful consideration is the role of learning in professional development. Education and training have to be seen holistically so that a decision can then be taken over what is appropriate to any required task with education providing the context for training.

Building the Knowledge, Skills and Competence Base

“We need Ferraris at Ford prices”

“Building the knowledge, skills and competence base requires by definition a very deep understanding of the military profession but it also requires that military professionals are open to new ways of thinking. PME will always be a “hybrid-culture”, i.e. a frictional interaction between the military and academic culture in which the former is process-oriented and the latter product-oriented. “

9. The key questions about PME concern the relationship between knowledge and learning and can be thus summarised: what do people need to know, when do they need to know it, and what incentives for the learner are needed to promote the desire for greater understanding? Given the particular nature of the "profession of arms" there is a critical need to ensure that the learner is given/generates the knowledge needed to succeed at every level of command. .
10. If the knowledge, skills and competence base is to be properly constructed given the many challenges facing NATO armed forces, then it is vital that barriers are lessened between military and civilian educators. Indeed, ever greater numbers of talented military officers will need to be sent out to civilian universities.
11. The growing need for interaction between civilian and military education institutions suggests a new approach to academic freedom. The military educator operates within a restricted domain that demands a much higher threshold of responsibility over the use of the sensitive information to it has access. However, an all-important military-academic partnership will demand that armed forces are far less proprietary about information.
12. Effective PME will also demand an end to "national hubris" and a willingness to confront honestly and early strategic and operational failures so that they can inform learning. In parallel there will be increased need to expose the learner to diversity, in turn imposing a demand on PME to establish new standards of intellectual interoperability with outside expertise. Certainly, any meaningful military-academic partnership in this day and age must be open to responsible academics free to undertake critical research.
13. The military-academic partnership will need to make the most of "experiential learning", possibly as part of a system of mentorship. Learning will become even more important as operations are concluded in Afghanistan and PME becomes the focal point for transferring and building command knowledge and experience, which in turn must help shape the knowledge base.
14. Lessons from other professions suggest possible answers to the problem of constructing a comprehensive and responsive knowledge base. The Carnegie Foundation recently undertook a major study into the Advancement of Teaching across several professions which could help to inform future PME. The study assessed the state of the art of educational programmes and led to recommendations for change, all of which pointed to a growing gap between programmes and curricula and the changing environment in which the professions operate.
15. Too often practice was not a central concern, with the emphasis more on the technical and the theoretical. Moreover, too many programmes did not place the needs of the learner central to their mission and ethos and there was little attempt to reinforce professional identity.
16. The medical and engineering professions are perhaps most akin to the profession of arms. Both professions have been re-considering educational practice in the light of change and both emphasise the need for a focus on practical reasoning within professional academic education. Interestingly, neither profession recognises any distinction between training and education.
17. The medical profession emphasises the need for "outcome-based education" (as opposed to output-based education) which in turn is established on five principles:
 - Professional education affords a professional career spine;
 - Teaching is focussed on key practical concepts;

- Learning outcomes are standardised;
 - Learning processes are tailored to meet the needs of the individual; and
 - Formal knowledge and (medical) clinical experience are integrated.
18. Similar principles can be found in the engineering profession's CDIO syllabus (Conception, Designing, Implementing, and Operating) which is now used by many universities to educate engineers.
 19. In essence both professions have adopted a problem-based approach to learning designed to foster in the individual a specific level of concepts and skills reinforced by progress testing via separate scientific and professional panels.
 20. There are several lessons for PME. The armed forces are in advance of the other professions in both identity-development and in some instances the use of new technology. However, experience from both the engineering and medical professions would suggest that in general military academic education must be more practice-oriented. There also needs to be a much clearer distinction between core and peripheral knowledge in support of outcome-based learning. To that end, PME needs to become far more outcome-based and learner-centric.
 21. Much will depend upon the extent to which a military-academic partnership can be established, as outcome-based learning will demand a much closer and longer working relationship between the educator, the learner and research, which itself must be reinforced by academic freedom and a focus on relevance. At the very least a new relationship is needed between research and education, which can only be developed if defence academics are given much more insight into the practice of both military art and science. Ironically, too often researchers and faculty have little or no contact. Indeed, in this age of restricted budgets separate research divisions are a luxury.
 22. The issue of relevance remains contentious with academics believing they are the guardians of relevance whereas given the focus on outcomes-based learning the 'client' needs to have a major say in what is taught and researched. However, the client needs to understand the nature of the challenge and thus relevance demands an "intelligent-client". And yet, resistance to 'intellectualism' is still found too often in senior military circles, which means that those making decisions over the provision of PME lack the tools and/or the inclination to make intelligence choices.
 23. Insufficient attention is paid to the appointment and retention of quality faculty. Do faculty have proven intellectual curiosity, a strong publication record, and the strength of character to cope with poor student evaluations? The reputation of PME in the civilian sector is in need of marked improvement if it is to attract the best and brightest, partly because so little professional development is on offer to civilian defence educators engaged in PME. Too often they are seen as peripheral and ephemeral service providers rather than partners.
 24. Education needs to be adaptable and agile according to the level and capability of the learner. At the mid-level education needs to be aimed at producing "brilliant mechanics", whereas at the higher-level education is needed that can reinforce "strategic level intuition" or what the French call "sensing". The problem is that the military system finds it difficult to cope with "too many of the likes of a Petraeus or Stavridis" but at the same time has to identify them early as they are critical to future strategic and military success. This reinforces the need for a life-long, or more accurately a career-long learning relationship which can identify early talent and which fosters an elite of officer-scholars, some of whom are sent off for a time into the civilian education sector with no suggestion that their careers will be blighted as a result.

Proving Relevance: Demonstrating and Measuring Success

“Education has got to matter”

“ Education and training must prepare people for command. Before relevance can be proven relevance to what needs to be established. “Do we want a McDonalds or an Apple”? In other words should the aim be what people want or what people need?”

25. Much of the PME challenge concerns how to “get the best and the brightest into the PME system”. In too many PME institutions the people who work hard and those that do not receive the same qualification, which tends to reinforce the belief that courses are rubber-stamp exercises to legitimise promotion. Given the complexity of modern military practice ‘relevance’ will require both more differentiation in courses but also in their quality. For example, Masters Degrees should not be given to everybody but only to those who earn them.
26. Furthermore, it is vital that PME remains central to the “conceptual component of fighting power” to which operational lessons are central but which is not simply fixated on past campaigns. In essence PME must be central to preparation for the challenges of command, in particular coping with complexity and the unexpected events it spawns, which is the hallmark of the current age. In that context measuring success will be a moving target because given the nature of the security environment defence academies must themselves be agile, adaptive and flexible. PME systems need to allow differentiation in education and military leaders to ensure the appointment of high-quality faculty.
27. Critically, demonstrating success at the institutional level must avoid simply becoming fixated on the cost of PME rather than its value. However, demonstrating value-for-money is a permanent reality. Therefore, external validation and performance-measuring of both education and training is critical to the measuring of success and in many NATO nations such reviews are carried out by civilian education professionals. It is also vital that comparisons are carried out on a regular basis with peer institutions in NATO countries and beyond. ACT clearly has an important role to play in such a peer review, possibly in conjunction with the NATO Defence College.
28. Demonstrating and measuring success at the learner’s level pre-supposes there is a clear understanding of the “customer’s” needs and that the customer has a clear understanding of need. The critical issue is the requirement to promote agile thinking and avoid a system that simply turns out “sausage thinkers”. Indeed, with the focus on the learner the ability to learn must itself be part of the assessment. This will tend to promote tailored learning for the individual which in turn will demand flexible syllabi and faculty able and willing to meet personal needs, possibly in conjunction with more electives, written work and exercises.
29. However, the limits of transnational action must also be clearly understood. So much of PME takes place at the national level, which makes much of the effort “culture specific” and for that reason it will be hard to measure “success” remotely. Indeed, PME is “very national, very parochial”, and it is vital that for all the complex challenges armed forces face “we must not separate military education from the *raison d’être* of armed forces”.
30. PME is aimed at deepening military capability to “help them to think” in the words of Marshal Foch. However, given the very national focus of PME it will be difficult to run the same programmes across borders. Indeed, given that PME is so central to national “esprit” the danger is that by multi-nationalising defence education it will be reduced to little more than a technical/vocational process. Quite simply PME for most nations is too deeply embedded in national culture, politics and ethics for a top-down template to be imposed. “Old habits live long”.
31. Therefore, transnational PME should be focussed on the elite 25% of officers who are likely to achieve high command of coalitions. Given that contemporary coalitions will be likely comprised of both military and non-military actors this elite will need to be educated in a multinational and multidisciplinary framework that is designed to make them look up and out and avoid the parochialism of national military stovepipes. The Geneva Centre for Security Policy has pioneered such an education concept with residential courses that place much emphasis on the building of environmental

knowledge and career-long networks.

32. PME will also need to be more tailored to individual career development and measured and assessed as such, especially as mission command is likely to lead to further decentralisation of command. To that end, the first step could be to create a “matrix at ACT showing what countries are doing in terms of policy, institutions, programmes and curricula”. This would help NATO nations better understand what if any consolidations of both programmes and curricula could be made.
33. Measuring relevance “is not a bullet that can be dodged” and will need to satisfy several stakeholders first and foremost of whom will be chiefs of defence staff and joint force commanders. Equally, in proving relevance an evidence-based approach must be adopted as such ‘proof’ is closely linked to demonstrating value for money. A first step would be a mapping exercise to examine just what subjects are taught across the Alliance to see if some subjects could be taught internationally or by clusters of like-minded nations.
34. It is also vital that PME keeps pace with the revolution taking place in civilian education. ACT must therefore lead in the creation of a defence education or PME vision which could establish the benchmark for proving relevance not just of education and training but of Smart Defence and the Connected Forces Initiative.

The Place of Technology in Professional Military Education: Limits and Opportunities

“PME is just one system in a system of systems”

“ The real revolution in education is not technology per se but the expert use of technology by students which must be reflected in PME. “The military too often miss the fact that the world is open because the military is too focused on developing its own closed systems”.”

35. There are at least two drivers of change – the growth of experiential learning and the way that people younger than twenty-five (“generation Y & Z”) learn.
36. The Danish armed forces are embarking on an interesting effort to square the forces, resources, and PME triangle through the use of technology, advanced distance learning and a determined focus on innovation. Given the changing defence ‘market’ the Danes no longer assume life-long military careers. Indeed, the requirement to cut 15% of the defence budget has forced the armed forces to make choices between capabilities and capacities that have led to a 30% cut in administration, personnel and education.
37. Long residential courses can no longer be afforded, which is promoting the extensive use of ADL as part of short, sharp but regular education experiences that place the onus of incentive on the individual. PME is thus becoming a kind of “running Sushi” in which electives and modules of choice shape both education and career paths, although one idea was that perhaps modular education should more closely resemble a “permanent Smorgasbord”. No longer can PME be seen as a “one-size fits all” model. Interestingly the Danes have found that the use of ADL makes face-to-face time between learner and educator both more valuable and more useful as much of the foundational knowledge has already been generated by the learner. As a consequence of the pressure of learning and of the need for self-motivation on the part of the learner, the elite become self-selecting.
38. This approach to self-selection which has been reinforced by a new partnership with civilian universities has enabled the Danes to release more educational resources into PME. Critically, PME is seen “as just one system in a system of systems” with educational skills regarded as an essential element in the differentiation between individuals, with non-performers required to leave. Courses are accredited by civilian universities partly to ensure that those who fail can make the transition to life outside the services.
39. Innovation within PME is but one development avenue. There is also a revolution in civilian use of education technologies that PME needs to exploit. At the very least it needs a better understanding of just what concepts, approaches and technologies exist

and how to exploit them. The US has undertaken an Advanced Education Research Initiative to tap into the civilian education revolution, building on the J7 Review of Joint Education in support of NDU 2020. The main finding is that technology and modularity go hand-in-hand.

40. Equally, given the exponential nature of technology change PME must avoid “fad technology”. The danger is that an increased reliance on ADL could also lead to demands for increased access to any source of information to service online learning. PME could be reduced to a kind of defence Wikipedia – strong on information, uncertain on quality.
41. There are a range of opportunities to exploit better emerging technologies. These include the creation of virtual worlds and avatars, the exploitation of mobile learning platforms and applications, massively open online courses (MOOCs), the rise of the ‘flipped classroom’ and the use multimedia information to take the place of lecturers, problem-solving gaming and gamification, and augmented-reality supported by social media and closed applications. Advances in 3D printing, wearable technology and learner analytics/big data (the “internet of things”) also suggest that the relationship between the educator and learner is changing.
42. To some extent distance learning will organise itself as “information docking stations” that promote a best practice debate between commissioned and non-commissioned officers. Sites such as “companycommander.com” have become an essential if informal part of continuous learning, not least because they are also open to former officers. One idea is that NATO may wish to create an “admiralgeneral.com” to promote a similar debate at senior command level. More formally the Royal Air Force has created a “blended learning” model that affords the learner 40-60 hours advanced distance learning over 2 years reinforced by a one week residential course.
43. The real challenge is the need to convince commanders of the value of learning and thereafter that time should be invested. One approach may be to audit the amount of total time spent on PME to ensure that total learning time does not change even if a shift to ADL takes place. Equally, there is a strong view that ADL cannot replace personal interaction but must rather be seen as supporting it. Nor should ADL or ‘e-learning’ “be seen as poor man’s learning”, as to invest in ADL effectively requires a significant resource commitment. Particular emphasis will also be needed to select those officers best able to exploit the new learning environment.

The Role of Academies

“Defence is a sub-set of something bigger”

“ The strategic need for academies has never been more apparent given the need to create “common understanding amongst all actors critical to successful security strategy and action”. The learning challenge is acute as the world is replete with uncertainty, instability and technology. ”

44. The dilemma faced by all academies is that whilst they must change, the resources available to effect change are limited. Academies today must cope with a wide range of strategic factors all of which are drivers of potentially dangerous change. Furthermore, armed forces are ever more reliant on outside actors such as contractors and (partially outside) reserves. Therefore, if academies are to meet the needs of the learner they must strike a balance between the preservation of a core academic critical mass and the need to access a wide array of expertise.
45. The learner challenge is reflected in key questions such as what sort of people are needed, how should they address challenges and what should they do? The British armed forces have distilled this into a concept called, “Be, Think, Do”. In terms of establishing a mission for academies this might more accurately be described as ‘plan, implement, and collaborate’.
46. Given the force/resource constraints the options available to academies in terms of successfully delivering the learning mission might be itself distilled into a balance between three options: focus PME solely on academies, which by design are bespoke but expensive; outsource to the civilian higher educational sector, which will afford the

learner a good education but with little or no military input; and/or distributed (workplace) and distance learning which might appear cheaper but is probably not so over the medium-to-long term.

47. The inherent value of academies is that they enable the learner to study conflict within the framework of a full strategic analysis. For the military learner they are not only relevant but essential as they provide a comprehensive, responsive and safe but challenging environment for generating skills and knowledge in what remains a uniquely challenging profession. Academies also afford the learner a through-career learning platform and can act as nodes for international and inter-agency engagement. What really matters is the 'progression' that academies provide, the relevance of programmes and curricula, and how they interact.
48. In that light the choice between war-fighting and wider security operations is in fact false and academies are one of the few places where all partners critical to success can be brought together under one roof. This suggests the need for academies to provide first and foremost a "broad education" that appeals to an "expanded stakeholder group", especially those "involved in the making of strategy".
49. The role of academies in today's challenging environment is thus to offer education supported by applied research that looks at the past and makes informed judgements about the future. As such, from the learner's perspective academies must simply "advance knowledge". Equally, whilst the "irreducible core" function of academies is to act as the guardians of military art and science they must indeed be part of a wider security community. To that end academies must also fashion themselves as champions of innovation.
50. For smaller NATO nations such a challenge suggests the need for a careful understanding of what can be produced in-house and what might be sought through partnerships with other institutions or clusters of nations. The creation of indicative NATO Educational Standards might help to foster common educational standards at the strategic and operational levels. The Baltic Defence College is a clear example of knowledge and expertise pooling.

Working Group Outputs:

51. Distance Learning, immersive education and mission command

- Distance-learning is critical to outreach which in turn helps promote an inter-agency approach.
- Technology will be a key enabler for PME but residential courses must be retained to ensure quality control.
- Establishing a technology-led PME domain will be expensive to perfect and will need strong academic input.
- Secure online access will be critical and all information must be made available digitally. Supporting IT must be robust "and never crash".
- The reconciliation of curricula between ADL and residential courses will be essential, with teaching methodology very clearly academically-led. Such a goal will demand the staff capacity to successfully run ADL courses. If not the poor reputation of ADL in the civilian education sector will be transferred into the military domain. Certification of courses will be vital.
- Immersive education technologies such as simulation and avatar technology are seductive, but much thought will need to be given to specific educational applications.
- There is a clear role for such technology in planning and cultural training.
- In support of mission command PME is vital to create leaders able to operate to

effect in complex environments. The key factor will be the considered choice of the right people for courses with the skills and aptitude to make informed decisions.

52. Enabling knowledge reach-back

- Reach-back is the "generation of knowledge that reinforces greater command agility and affords a nuanced timely situational understanding for decision-makers (policy and operations) at affordable cost".
- The aim must be to create new knowledge via the harmonisation of the "latent power of existing groups and to create new ones" that can inform operational commanders with relevant and useful information.
- Relevance: reach-back must be multi-directional, not linear, but able to "generate usable knowledge". As such reach-back is far more than the traditional Request for Information (RFI) to the Intelligence Community. Indeed, reach-back needs to be "RFI plus plus", an intelligent system that can tap responsible networks of academic and other expert partners.
- Academies have a key role to play in the management of such network as filters, interpreters and advisors as well as 'havens' for deeper reflection and challenging assumptions (Black Swans).
- Characteristics: Knowledge must be timely, with those generating knowledge taskable. Input must be short and pithy but add texture via nuance.
- Limits: Much reach-back will involve open-source or unclassified input. There will need to be discipline to avoid information overload. This will place a particular challenge on quality assurance by academies.
- Recommendations: Academies should create self-selecting pools of experts and act as both the point of contact and "community creator". Academies should also act as creator and validator of the "rules of the game" by overseeing "results-based validation".
- A NATO nation academy or groups of academies may wish to pilot a trial project, which if successful could be institutionalised (possibly by end of 2014). This effort could be supported at ACT by a wider strategic horizons group.

53. Promoting life-long learning relationships (LLR)

- Life-long learning was a 1990s concept driven by a range of then relevant factors such as recruiting and retention as a means to ease redundancy.
- Today a more appropriate concept would be career-long learning relationships (CLR) including helping to define entry requirements for those wishing to seek a career in the profession of arms.
- CLR should be an essential characteristic of a military career designed to develop an agile mind as well as an essential measure of competence.
- Challenges include careful definition of the mission of those who take responsibility for through-career education, from entry level right through to senior command.
- The danger that CLR could lead to yet another "bloated layer of bureaucracy" is real and must be avoided.
- Central to CLR would be the mentoring of talented, junior officers by experienced ones.
- A key issue would be the extent to which CLR would be constructed to afford the learner the maximum choice possible and in turn be shaped by the choices officers make.
- A "push-pull" system could be constructed that on the one hand 'pushes' education

onto the learner and on the other enables learners to 'pull' CLR towards them.

- CLR should also be designed to reach out to the wider security and political community.
- Civilian educational standards and qualifications would be central to CLR as much of the education would be imported from the civilian sector.

54. Exploiting the information environment

- The changing information environment implies opportunities, consequences and even threats to PME. Specifically, educational processes must be adapted to recognise the "different way of life" of those below the age of twenty-five.
- The challenge posed by educating young people raises profound issues of rigour and analysis.
- Plagiarism is always a risk in a hyper-competitive environment in which so much of the digital domain is 'populated' by uninformed opinion masquerading as knowledge.
- Equally, the information environment also affords many opportunities such as the possibility of real-time situational awareness that can be exploited by PME.
- It is critically important that staff are trained in and educated to use the new technologies. Many PME faculty members are over twenty-five and far inferior to their students/learners in the use and exploitation of information technologies.
- The broad range of topics in today's PME makes it virtually impossible for faculties to have the necessary expertise to cover all subjects. This increases the pressure to introduce new expertise into academies either as faculty and/or partners.
- In such an information environment academies must seek to work across information stove-pipes, act of centres of informed reflection, be open and willing to review and change curricula in light of evidence, and provide PME continuity.

Conclusions

“Knowledge remains the real spearhead”

The distinction between education and training does matter to PME as “Training is for certainty, whilst education is for uncertainty”. However, every attempt must be made to ensure there is no firewall between the two. The armed forces need to be clear that higher education is a profession in its own right with its own exacting standards that can be used to ensure PME standards and qualifications. Equally, education affords PME far more than simply qualifications as its *sui generis* nature generates an all-important talent pool for the profession of arms.

To exploit fully the military-education partnership (the most important such partnership) the military needs to become more open than it has ever been before to the educated mind. Equally, educators and educating must be far more open to the military. This is because knowledge remains the real spearhead to be generated, deployed, used and assessed. Indeed, in this complex world knowledge is the key to comparative advantage in hyper-competitiveness for any institution. Given the very ‘real’ nature of hyper-competition in the profession of arms comparative advantage is an end in and of itself towards which PME and its supporting institutions must be organised.

False choices or “recognising only as much knowledge as we can afford” must be assiduously and consciously avoided even though affordability is the driving mantra of this age. Knowledge must be BOTH broad and deep, just as education must be both wide and profound, informing the war-fighter and security actor alike. That does not mean that specialisation will be lost. Far from it, in a properly organised PME structure itself

established on agile academies able and open to the exploitation of both technologies and partnerships, specialisation will become the organising principle for a realm of all the talents. Indeed, in a learner-centric environment tailoring PME to specific career choices will create both broad and deep learning outcomes.

Indeed, if there is one concept that should inform PME in this Alliance in this century it is not inputs or outputs but education and training outcomes. By establishing that concept early PME will become the hitherto unexploited strategic enabler underpinning leadership at all levels of command and in all defence and security domains.

Outcomes will need to be invested in and tough choices made as strategy and decision-making never take place in isolation from resources. Central to an outcome-driven concept of PME will be the rapid acquisition and reacquisition by the learner of that most precious of military commodities “judgement”.

Given the nature of emerging security challenges and the austerity which is the ‘pot-mark’ if not hallmark of this age no single actor can afford or guarantee security or defence. That is why a community such as NATO exists. And, whilst much of the PME effort will take place at national level it is precisely those communities that can champion strategic unity of effort, purpose and knowledge in this age that will prevail.

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