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Transformation of Brigade Special Troops Battalions to Brigade Engineer Battalions: Lessons Learned and Best Practices

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The present research aims to examine the demands and challenges faced by Brigade Engineer Battalions (BEBs) in Armored Brigade Combat Teams (ABCTs) in the Organization, Training, Leadership and Education, and Personnel (OTLP) domains during transformation from a Brigade Special Troops Battalion (BSTB) to a BEB. Cognitive, social, and cultural issues encountered during transformation was also examined. Officers and noncommissioned officers who are or had served in BEBs (ABCTs) were interviewed to capture the lessons learned and best practices so that these can be applied for more effective and efficient unit transformations in the future.

15. SUBJECT TERMS

BEB BSTB Transformation Engineer

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TRANSFORMATION OF BRIGADE SPECIAL TROOPS BATTALIONS (BSTBs) TO BRIGADE ENGINEER BATTALIONS (BEBs): LESSONS LEARNED AND BEST PRACTICES

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TRANSFORMATION OF BRIGADE SPECIAL TROOPS BATTALIONS (BSTBs) TO BRIGADE ENGINEER BATTALIONS (BEBs): LESSONS LEARNED AND BEST PRACTICES

The U.S. Army defines transformation as 'the continuous and holistic evolution of Army capabilities over time from the current to the future force. Transformation supports our ability to provide and sustain dominant, full spectrum landpower for Combatant Commanders. Transformation also improves our ability to support Soldiers, Families, and Civilians. The goal of transformation is to provide strategically responsive landpower that can achieve decisive outcomes across the spectrum of conflict from peacekeeping to war fighting, with an inherent ability to adapt to unpredictable changes in the context and character of conflict and the ability to sustain operations for as long as necessary to achieve our Nation's strategic objectives' (Department of the Army, 2008). As the Army transforms, it is imperative to identify the challenges faced by transforming units to capture lessons learned and develop best practices. With this knowledge, Army policies, practices, and processes can be improved to enable more efficient transformations that minimally impact a unit's readiness during its conversion.

Historically, Army units were organized as large divisions prepared to fight in major theatres. Over the last two decades, the changing nature of warfare has led to restructuring of division centric formations into smaller modular brigades (BDEs). The aim of modularity is to provide the Army with adaptive and flexible combat-ready BDEs that could still maintain unit stability and cohesion (Schoomaker, 2004, Special Briefing). According to Army doctrine, the Brigade Combat Team (BCT) is the basic ground component for combat operations, with each BDE structured around Infantry (IBCT), Armor (ABCT), and Stryker (SBCT) (Department of the Army, 2015). Each BCT has organic elements such as military intelligence (MI), field artillery (FA), signal (SC), engineer (EN), reconnaissance (RECON), and sustainment (SUST), and can be augmented by non-organic components (e.g., a Medical Company).

Originally, each ABCT or IBCT had a Brigade Special Troops Battalion (BSTB). The BSTB functioned to provide diverse support to the BCT with capabilities in MI, EN, military police (MP), chemical, biological, radiological, and nuclear (CBRN), reconnaissance, communications, and command and control of attached units (Merceron, 2007). As part of the Army 2020 Force Structure Realignment plan, the Chief of Staff of the Army, GEN Odierno (2013), announced that "we will add a third maneuver battalion (BN) and additional engineer and fires capability to each of our armor and infantry BCTs in order to make them more lethal, more flexible, and more agile." This transformation was the most significant change to date in the BCT formation. As part of this restructuring plan, all BSTBs in active and National Guard ABCTs and IBCTs would be reflagged as Brigade Engineer Battalions (BEBs). The BSTB to BEB conversion started in FY14 and is expected to continue through FY18 (Center for Army Lessons Learned, 2015).

The present research examined the transformation of BSTBs to BEBs in ABCTs even though similar conversions occurred in IBCTs. This selection was made mainly due to the availability of units. Figure 1 illustrates the redesign of the ABCT, with the BEB replacing the BSTB. The changes were an addition of a second combat EN company, the loss of a MP platoon, relocation of the CBRN reconnaissance platoon to the BEB Headquarters and Headquarters

Company (HHC), and attachment of a Forward Support Company (FSC) from the Brigade Support Battalion (BSB) (Department of the Army, 2015).

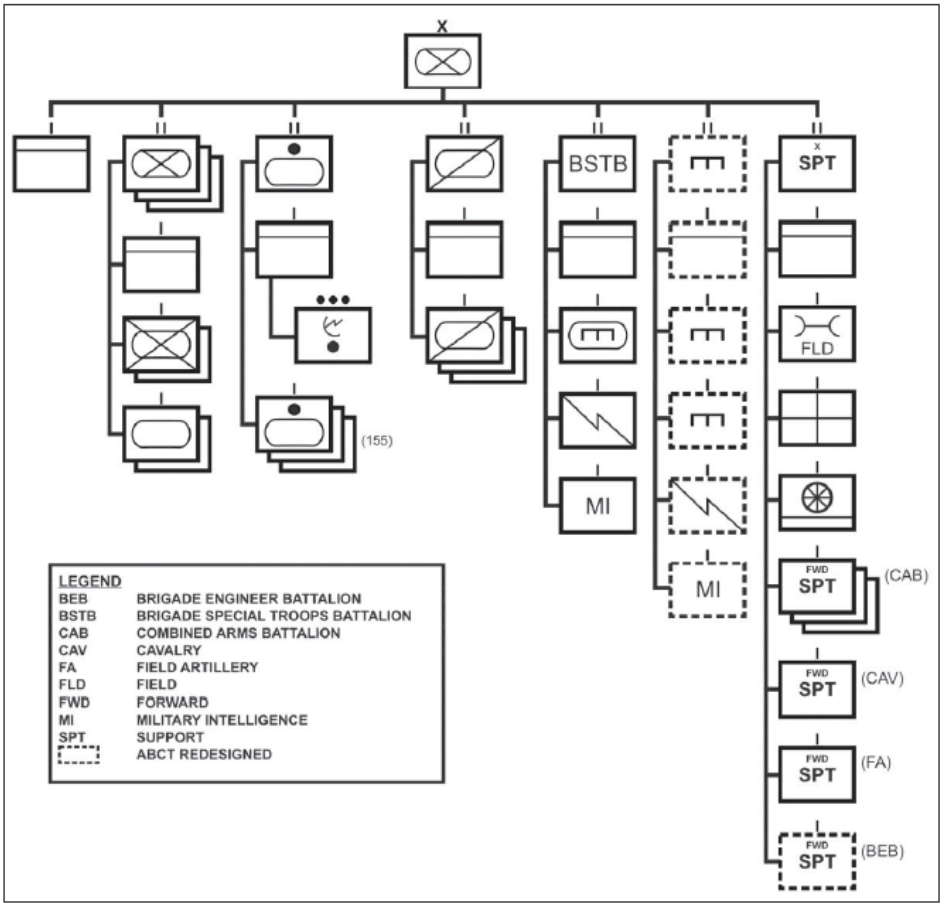

Figure 1: The redesign of the ABCT. The BEB (dashed rectangles) replaces the BSTB (Department of the Army, 2015).

The BEB has five companies: HHC, Combat EN Company (A), Combat EN Company (B), a Brigade Signal Company (SC), and a MI Company (Department of the Army, 2015). The missions for the parent unit and companies are specified in the Modified Table of Organization and Equipment (MTOE). The parent unit's mission is to command, control, and sustain organic and attached units in support of the ABCT commander and staff. The HHC's mission is to provide Mission Command (MC) and supervision of the tactical operations of the BEB, ABCT, and all assigned/attached Operational Control (OPCON) units. The mission of the EN companies is to increase the combat effectiveness of the BCT by accomplishing mobility, counter-mobility, and limited survivability and sustainment. The mission of the brigade SC company is to provide 24-hour operational Command, Control, Communications, Computer, Intelligence, Surveillance, and Reconnaissance (C4ISR) signal systems network to the supported Heavy/Infantry Brigade Combat Teams (A/IBCTs), which include deploying, installing, operating, and maintaining these systems. The mission of the MI Company is to provide timely, relevant, accurate, and synchronized Intelligence, Surveillance, and Reconnaissance (ISR) support to the maneuver units within the BCT. The BCT commander, staff and subordinates utilize this information during the

planning, preparation, and execution of multiple simultaneous decision actions on a distributed battlefield. In addition to these companies, the BEB has an attached FSC from the Brigade Support Battalion (BSB) that provides direct support to the BEB.

As described above, the BEB has diverse mission sets which necessitates diversity in personnel and equipment. The personnel authorized are from over 10 career management fields (CMFs), with approximately 41% in CMF 15 (EN), 20% in CMF 35 (MI), and 15% in CMF 25 (SC). The BN commander (CDR), command sergeant major (CSM) and S3 (Training officer) positions are coded for engineers. The executive officer (XO) position is coded for a generalist officer (01A00) and Branch Immaterial (BI). Similarly, the authorized equipment is wide ranging and include assets to conduct of EN, SC, MI, and other mission-related tasks.

When considering transformations and assessing capabilities, the Army addresses issues using a framework of Doctrine, Organization, Training, Materiel, Leadership & Education, Personnel, and Facilities (DOTMLPF). Since operational units have limited or no control over some domains, the present research will focus on domains that individual units may effectively control, such as, OTLP. Newly-formed units are likely to encounter significant demands and challenges in personnel and training during the early phases of restructuring. For example, one challenge faced by BEBs in ABCTs is to resolve how to maintain the responsibilities for planning, training, and operations while filling the critical need for a Bradley Master Gunner (MG) in the S3 Section. For maneuver capabilities, a BEB (ABCT) is authorized full tracked infantry fighting vehicles (i.e., Bradley M2A3). However, in contrast to most infantry and/or cavalry BNs in ABCTs, the BEB is not authorized an operations (OPS)/S3 Bradley MG slot in the S3 Section. Rather, a senior noncommissioned officer (NCO) is taken 'out of hide,' a process likely to cost the S3 Section because the workload of a Bradley MG is considerable, labor intensive, and time consuming, and very likely more than an 'additional duty.' Further, selecting suitable and eligible NCOs (E5-E7) for the Bradley MG course is in itself a challenging task for units. The 14-week course is very difficult and has a graduation rate of ~ 50% (Little, 2009).

The present research aims to examine the challenges faced by BEBs (ABCTs) in the OTLP domains during the BSTB to BEB transformation. Cognitive, social, and cultural issues encountered during transformation will also be examined as these factors may impact unit training and readiness (Conrad, Bryson, Crabb, & Riley, 2013). Officers and NCOs who are or had served in BEBs (ABCTs) were interviewed to capture the lessons learned and best practices so that these can be applied for more effective and efficient unit transformations in the future.

Method

Participants and Procedure

Participants were nine officers and three NCOs who had served or were serving in five BEBs (ABCTs). Previous and current BEB (ABCTs) CDRs, CSMs, XOs, S3s, HHC First Sergeants (1SGs) were recruited by phone, email, or through a research support request procedure. They were informed of the aims of the research and were provided an informed consent form and an interview questionnaire (Appendix A). Participants provided either written or verbal responses.

Data analyses

Responses were analyzed qualitatively and categorized according to themes. Although the interview questions asked about OTLP domains, the responses received included issues in the MF domains. Consequently, the results are categorized into the following topics: OTMLPF, and cognitive, social, and cultural.

Results

Organization. Organization is defined as "a joint unit or element with varied functions enabled by a structure through which individuals cooperate systematically to accomplish a common mission and directly provide or support joint warfighting capabilities. Subordinate units and elements coordinate with other units and elements and, as a whole, enable the higher-level joint unit or element to accomplish the mission." (JCIDS, 2012). The themes that emerged on the BEB organizational design and mission can be categorized into i) command staff, ii) HHC, and iii) EN companies.

(i) Command staff. The senior command staff are the CDR, CSM, XO, and S3. In the BEB, the CDR, CSM, and S3 positions are coded for EN, whereas the XO position is coded for a generalist. Given the unit's diverse mission sets, slotting the CSM and XO positions with non-engineers (i.e., MI and/or SC) was thought to provide a better balance in senior leadership and to expand the expertise beyond EN. Filling these positions with non-engineers was perceived to make the BEB less engineer-centric.

(ii) HHC. With the transformation, the HHC had the largest and most complex change. The number of authorized personnel in the HHC decreased from ~200 to ~80, due to a loss of a MP platoon, and all the mechanics and cooks. Without the MPs, the BEB no longer has its own organic security capabilities. Retaining the MPs was thought to make more sense as they generally ended up as an attached element during training at the National Training Center (NTC). Although the BEB lost assets and resources in some areas, it gained in other areas. Specifically, it acquired a new attached FSC. In one case, the FSC was significantly under-strength, partly because it came from a deactivating unit. For this BEB, the additional challenges were a HHC change of command and a redeployment from training at NTC.

(iii) EN companies. In order to increase combat power, the BSTB to BEB transformation provided a second combat EN company to the BEB. Nevertheless, some participants thought it better to have added two combat EN companies, so that each of the three EN companies could be tasked-organized to each of the three Combined Arms Battalions (CABs) in the ABCT. Such a 1-to-1 pairing was thought to facilitate training and working relationships between the units. Figure 2 depicts the composition of the two EN companies in the BEB (adapted from Figure 1-3, Department of the Army, 2014). The asymmetry between the two EN companies, in both personnel and equipment, was thought to create imperfect habitual alignments of capabilities and relationships. In order to solve this imbalance, one BEB re-organized their personnel and equipment allocations (e.g., Assault Breacher Vehicles, ABVs) to better align their capabilities. In another BEB, the unit placed all their engineers/Sappers in one company and all their other engineering capabilities (e.g., horizontal construction, route clearance) in the other company. Notably, several participants mentioned that the route clearance platoon was under-utilized and

that there was no perceived current or immediate future need for route clearance missions. Consequently, some route clearance platoons trained more on route reconnaissance than on route clearance. In this way, they were aligned with the Cavalry scouts, and were task organized to the Armored Reconnaissance Squadron (ARS) in the BCT. In some units, MI personnel were also task-organized to the ARS.

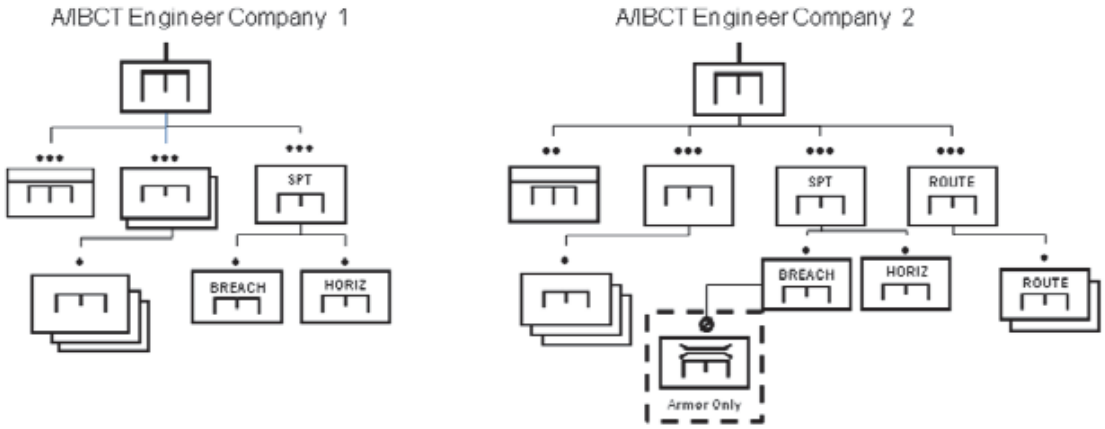

Figure 2: Engineer companies 1 (or A) and 2 (or B) in BEBs (A/IBCT). Company 1 consists of a company headquarters, two combat engineer platoons, and an engineer support (SPT) platoon. Company 2 (B) consists of a company headquarters, a combat engineer squad, a combat engineer platoon, an engineer support platoon, and a route clearance (Route) platoon. The support platoons have breach (Breach) and horizontal construction (Horiz) assets (adapted from Figure 1-3, Department of the Army, 2014).

Training. Training is defined as "training, including, mission rehearsals, of individuals, units, and staffs using joint doctrine or joint tactics, techniques, and procedures to prepare joint forces or joint staff to respond to strategic, operational, or tactical requirements considered necessary by the combat commands (CCMDs) to execute their assigned or anticipated missions" (JCIDS, 2012). Responses in the Training domain can be categorized into (i) planning and execution, (ii) resources, and (iii) non-transformation related issues.

(i) Planning and execution: Training plans were thought to focus too heavily on EN tasks and not enough on MI and SC tasks. The strong emphasis on training EN tasks was perceived to be due partly to makeup of BEB leadership: Senior leaders were predominantly engineers who were unfamiliar with non-engineer assets and capabilities and did not know how to train MI and SC personnel. The importance for the S3 and XO to know all systems and capabilities in the BEB and for personnel in the S3 section to know and understand the training requirements of non-engineer companies was emphasized.

Another challenge identified was the expectation by BDE that the newly transformed BEB is already trained for BDE field training exercises (FTXs). During the initial stages of transformation, the training timelines for BEB and BDE may not be synchronized and the newly formed unit is unlikely to have had sufficient time to train-up for FTXs. The BDE was perceived to focus on 'main' training events and prioritizes AR and IN units rather than supporting elements, such as the BEB. Furthermore, training was considered extremely challenging to plan and execute when transformation occurred during or adjacent to critical and high operating tempo (OPTEMPO) missions. For example, one unit was planning for transformation in the

midst of preparing for National Training Center (NTC) training, whereas another unit transformed while deployed overseas. Better coordination, synchronization, and support were thought to be needed from adjacent and higher elements to plan and execute training during the BEB transformation. Suggestions to facilitate a more seamless transition included protecting or 'fencing' units undergoing transformation from deployments, NTC rotations, and red-cycle and other taskings so that the units can focus on just transformation and day-to-day operations.

The location of the BEB command post (CP) relative to the BDE CP during training was also mentioned as a potential point of friction. According to the Army's Center for Lessons Learned (2015, pg. 3), the 'The BEB command post (CP) normally co-locates with the BDE CP and establishes future operations, current operations, and plans cells. The staff sections describe their setup in a tactical standard operating procedure (TACSOP). The BEB tactical CP normally co-locates with the BDE tactical action center.' The interpretation of 'co-location' of the CPs can cause friction between the BEB and BDE. In most cases, co-location is taken to mean at an 'optimal' distance, taking all factors into consideration for their respective missions, rather than actually sharing the same physical footprint.

(ii) Resources. The biggest concern for training during transformation was the competing requirements and the lack of time to accomplish all tasks. Other resources that impacted training include the lack of personnel, equipment, and facilities and are described in more detail in the OMPF domains. The resources provided by the Training and Audiovisual Support Center was considered sufficient and did not impact training.

(iii) Non-transformation related issues: Currently, Sapper platoons have to qualify on Gunnery Table VI (GT VI). However, it was suggested that the Bradley crews should also train and qualify on GT IX-XII (maneuver) to increase their understanding of what CAB platoons do and to provide the BDE CDR with the flexibility to use the BEB combat EN platoons as maneuver elements. For BEBs aligned with 'light' (i.e. Airborne and Infantry) units, both unit types need to understand the time differences required to move personnel and equipment. The high OPTEMPO experienced by units was also raised as a challenge to meeting training and validation requirements.

Materiel. Materiel is defined as "all items necessary to equip, operate, maintain, and support joint military activities without its distinction as to its application for administrative or combat purposes" (JCIDS, 2012). The main issues raised in materiel can be categorized as (i) excess equipment and (ii) shortage of equipment.

(i) Excess equipment. As mentioned in the Organization domain, the BSTB to BEB conversion meant the loss of the MPs. However, during the early stages of transformation, the MP vehicles remained in the BEBs prior to lateral transfer. This situation posed a challenge because the new units no longer had mechanics trained to service and maintain such vehicles. Consequently, some of these vehicles were not maintained to 10/20 standard for lateral transfer. In general, having excess property was reported to be stifling and to have negative impacts on the units. Some units reported having excess equipment more than two years after transformation. The BEBs with excess equipment were burdened with maintaining the equipment and getting it to 10/20 standard for lateral transfer. As a consequence, the unit tended to become delinquent on maintaining their authorized equipment because personnel were

diverted and tasked to transformation-related tasks. Waiving the 10/20 standard for lateral transfers during transformation was suggested as a method to enable gaining units to quickly receive equipment and losing units to relinquish the excess property.

(ii) Shortage of equipment. A shortage of equipment also impacted training and readiness. For example, one BEB was given the Standards in Training Commission (STRAC) ammunition allocated for a construction unit instead of the one for a BEB. As a consequence, the unit did not have sufficient Bradleys and ammunition for gunnery training and qualification. The EN companies are assigned equipment for mobility and counter-mobility operations. The BEB is authorized three ABVs, a tracked armored engineer vehicle for mobility operations. The ABV was designed for in-stride breaching of minefields and complex obstacles to clear safe lanes of passage for other vehicles. One participant stated that the number of ABVs authorized is half that required for each CAB to conduct doctrinal breaching. Others stated that the BEB requires more counter-mobility assets (e.g., Volcano Mine Dispersion vehicles). The need for this capability has been recognized by the Army as the Volcano system is being made compatible with vehicles in the BEB (Judson, 2016).

Personnel. Personnel is defined primarily as "qualified personnel that exist to support joint capabilities requirements" (JCIDS, 2012). The BEB has numerous low-density and/or specialty MOSs (e.g., 15E Unmanned Aerial Systems (UAS) support/maintenance) that are difficult to fill. Only one of the BEB units surveyed mentioned that they did very well in Personnel and that the unit was ahead of the initial operational capacity/full operational capacity (IOC/FOC) personnel strength projections. For other BEBs, filling the slots in the BEB with authorized MOSs was a considerable challenge, most of which were encountered within 90 days of transformation.

One participant noted that it was critical for the S1 and the CSM to 'juggle and manage' covering the leadership positions. Importantly, it is critical to select a XO and a S3 who understand all systems in the BEB. Given the BEB's diverse mission sets, it was important that personnel in the S3 section understood the training requirements of the different companies (e.g., EN, MI, and SC). Although the S3 section is not assigned a Bradley MG, it requires a NCO with experience in gunnery preparation, execution, and evaluation (e.g., ammunition allocation, range planning, etc.).

In one instance where positions were not filled, the unit went to half-strength and half-time. Owing to the addition of a second EN company, there tended to be personnel shortages during the initial stages of transformation. Thus, units had to balance and manage personnel across the two combat EN companies. In another case, a unit was forced to deviate from the traditional and standard process of matching MOS to job assignments. Instead, the slots were filled by the best available persons for the jobs. This seemed to be more frequently encountered at mid-grade NCO and junior officer levels. For example, one unit slotted an EN officer as the FSC XO due to availability. It was noted that the BEB has to engage with BSB/FSC leadership for manning the FSC, a task that was best done prior to transformation. Other non-transformation specific personnel challenges included non-deployables, profiles, expiration term of service, permanent change of station, and those with legal, medical board, behavioral health, risky behaviors and disciplinary issues.

Leadership and education. Leadership and education is defined as "professional development of the joint leader is the product of a learning continuum that compromises training, experience, education, and self-improvement" (JCIDS, 2012). Leadership and educational challenges were most likely to occur within 60-90 days after transformation. These challenges can be categorized into the following themes: (i) priorities of work, (ii) developing knowledge in non-engineer areas, (iii) command climate and culture, and (iv) attending courses and mentorship.

(i) Priorities of work. Balancing regular operational and mission related tasks with transformation-related tasks was one of the most common challenges faced by the units. In most cases, the transforming units did not have personnel who could work solely on transformation-related tasks. Consequently, the need for the BEB CDR to provide clear guidance on work priorities – day-to-day versus transformation related tasks was emphasized.

(ii) Developing knowledge in non-engineer areas. The first generation of BEB senior leaders, particularly the officers, were engineers who 'grew up in an EN world' and may not grasp how MI, SC, FSC, and staff would fit into the BEB. If all senior leadership in the BEBs are in EN, then they may not have sufficient knowledge to train and advise in MI, SC, and other CMFs in the BEB. It was suggested that the BEB to reach out to the BDE S2 and S6 (communications) and use them as mentors and coaches. One BEB developed its own leadership program which included the S2 and S6 in operations and as deputy S2 and S6 in BDE. Other suggestions include (a) broadening the pre-command course at Fort Leonard Wood to cover more topics relevant to the BEBs, such as those relating to MI and SC, and (b) attending a SC course at Fort Huachuca prior to taking command of a BEB. However, it must be noted that with the passing of time, the follow-on generations of BEB leaders are likely those who had served as a BEB XO and/or S3 (operations). Consequently, their prior experiences in a BEB would be invaluable and likely serve to enhance their understanding of the diverse mission sets, assets, and capabilities in the BEB.

(iii) Command climate and culture. The BEB does not exist for itself, but functions as an enabler to support BDE. Owing to the unique composition of the BEBs, the units are thought to require a lot of work to produce unit cohesion. One participant mentioned that each company can end up doing their own thing because training on mission essential tasks (METs) would not bring all personnel in the BEB together. Forming unit cohesion in garrison was thought to be more challenging because the unit is not 'training' like at NTC or fighting as a unit down-range. One participant thought that a strong emphasis on 'Train Hard, Play Hard' was the best approach for developing unit cohesion. Other suggestions for creating unit cohesion include conducting various team-building events before, during, and following transformation. Team building events that were transformation specific include (a) pre and/or post-transformation Leader Development Program (LDPs) with key leaders from the rest of BDE/TF led by BEB leadership to educate the unit(s) on what the BEB brings to the fights that is different from a BSTB, (b) pre-transformation LPDs with Soldiers in the unit lead by BEB leadership to educate, inform, and discuss transformation-related concerns and queries, (c) post-transformation dine-in with invited speakers who have served previously in the same-named unit. Other non-transformation specific team-building events suggested were (a) 'generic' non-MOS specific and 'healthy' BN competitions every quarter (e.g., tough mudder, 10Ks, spur rides) and (b) combined arms

training with other BNs in the BDE. While the importance of team-building events was recognized, the most serious barrier to conducting such events was the lack of time.

(iv) Attending courses and mentorship. In general, attending schools was considered difficult because of competing requirements (e.g., NTC rotation) and lack of suitable personnel rather than due to transformation per se. An issue that was transformation-specific was attending the Bradley Leader's Course which was not initially coded for 12Bs (combat engineer, enlisted). This necessitated a waiver for 12Bs from BEBs for attend the course. The importance of both vertical and horizontal mentorship during the transformation process was also mentioned.

Facilities. Facilities is defined as "real property consisting of one or more of the following: buildings, structures, utility systems, associated roads and other pavements, and underlying land" (JCIDS, 2012). Initially, some BEBs encountered lack of facilities in office and motor pool space. In one case, the BEB was split across two distant locations, leading to the need for extra effort and travel time for face-to-face communication and meetings. In some cases, the BEBs were not provided more space to accommodate the new equipment that came with the new EN Company. Another challenge encountered by some units was to know how to "seamlessly" transition to the new unit's Unit Identification Code (UIC) on all logistic, training, and management systems.

Cognitive processes. Questions on cognitive processes covered the different ways of learning and thinking required during the transformation. Responses on cognitive processes can be categorized into the two main areas of (i) change in mindset required for new missions and (ii) time-in-service effects.

(i) Change in mindset required for new missions. The true barriers to transformation were thought to be in how the new companies 'got into the fight' and the change in mindset required for the new mission sets. Legacy companies had battle drills, SOPs, and other processes that could hinder transformation. In particular, the change in mindset required for the new unit's missions may not have been communicated clearly enough to junior Soldiers. One participant mentioned that their BEB could have done a better job in conveying issues relating to mission shift (i.e. focus on EN) prior to unit transformation. Units could have been more proactive and communicated the upcoming changes in a number of ways: (a) Leader Professional Development sessions and engagements with BDE leadership, and (b) 1SGs informing junior enlisted Soldiers the intention and consequences of the transformation and the individual and collective roles in the BEB. Further, Soldiers who were task-organized to other units needed a clearer understanding of to whom they belong. Critically, BEB leadership have to be proactive and meet with Company leadership to discuss the unit transformation before it occurred. The extent to which the BEB fits in the BDE was thought to depend highly upon the BDE CDR.

(ii) Time in service effects. Pre-modularity (pre-2004), EN BNs existed in BDEs and functioned to provide engineering capabilities to BDE. Thus, for most senior leaders and others with more than 10 years of service, the concept of providing enabling capabilities to BDE was not new and not much change in thinking was need.

Social processes. Questions one social processes asked about relationship within and outside the BEB. The responses can be categorized into (i) interactions within the BEB, (ii) interactions with other BNs and BDE, and (iii) communication with spouses and family.

(i) Interactions within the BEB. Generally, no briefing and/or training were given to Soldiers prior to transformation. The psychological aspect was not so much with ENs, but more so for MI and SC personnel to guard them from feeling like an 'out-group.' Participants mentioned the importance of emphasizing that the primary BEB mission is to provide BDE with EN, MI, and SC support and not just EN support. For EN companies, collective training events on METs can serve to bring the team together. In contrasts, other elements within the BEB, such as MI, SC, and maintenance, do not really have their own collective training events. As a result, there is a need to focus on 'Soldier stuff' rather than military occupational specialty (MOS) specific training for building unit cohesion. Suggestions for improving unit cohesion include creating healthy competition across the branches by conducting team sports competitions, utilizing common Soldier skills, and cross-training Soldiers to facilitate learning each other's jobs and capabilities. Recognition of the loss of personnel (e.g., MPs and support) from the unit and acknowledging their contribution was also raised as a best practice. One participant mentioned that it was tough losing the MP, maintenance, and support platoons and that there was an obvious decline in their morale.

(ii) Interactions with other BNs and BDE. Under the new construct, the maintenance and support platoons were sometimes re-absorbed into the newly formed FSC. In one case, personnel were transferred temporarily to the BSB chain of command without attachment orders before returning back to the BEB. The temporary transfer was considered difficult and challenging because: (a) the new chain of command did not know the Soldiers strengths and weaknesses, (b) there was insufficient time to establish good working relationships between Soldiers and their new temporary chain of command, (c) it was difficult for leaders in the BEB to relinquish their Soldiers and trust that the new chain of command in the BSB would look after their Soldiers in a comparable manner.

Similarly, the challenges with adjacent sister BNs and with BDE were also in terms of conveying the unit's new capabilities. It was thought that the Engineer Regiment did not provide sufficient information on what enabling capabilities a BEB offers a BDE. Engineers are respected and looked upon highly and there was no major issues within the BDE. However, it is important to be pro-active and look for opportunities, especially with infantry units. It is also critical to understand that the majority of senior officers in ABCTs are trained in Infantry (IN) and Armor (AR), and not EN. The order in which each of the BNs brief to BDE may give the perception of how they are hierarchical structured in the BDE. In one BDE, the BEB briefed second to last and ahead of the BSB, giving the impression that the BEB and BSB are inferior to the CAB units. One suggestion was to mix the order up so that units do not consistently feel 'more' or 'less' important. Not surprisingly, communication was considered a key factor in fostering good interactions with sister BNs and BDE.

(iii) Communication with spouses and family members. Generally, there was no communication to the spouse and family members about the transformation. When communication did occur, it was open and candid and the message was that the transformation

might be turbulent and hasty. One respondent mentioned that the "emphasis on families and the family readiness group (FRG) strength are much less nowadays partly because of social media."

Cultural processes. The questions on cultural processes focused on how to change attitudes and actions to accomplish new training and mission sets. The responses is this section can be categorized as (i) developing an enabler mindset and (ii) unit identity, lineage, and honors.

(i) Developing an enabler mindset. As described above, the transformation produced a shift in priorities: the focus shifted to EN whereas it was more equal in the BSTB. The culture of the unit was more engineer-centric. The cultural challenges ranged from no resistance to resistance from personnel, particularly, from non-engineers. The BEB is faced with a challenge of creating a team of multi-functional (> 10 CMFs) MOSs to work as a cohesive unit in a unit that is named an EN battalion. Furthermore, more than 40% assets in the BEB are not in EN, with considerable asset in MI (e.g., UAS). Participants stated that non-engineers can feel like 'outsiders' in the BEB. Non-engineer companies may feel like they are not treated equally in terms of training because the transformation shifted the focus of training to engineering tasks. One solution presented was to identify early on, at all levels, what issues and concerns personnel might have on the transformation and to address any issues as soon as possible. Other best practices suggested were to emphasize that all companies, not just the combat EN companies, have important roles and missions and to treat them the same. Importantly, all personnel need to develop an enabler mindset even though the unit is known as an EN battalion.

(ii) Unit identity, lineage, and honors. The BEB name identifies the unit as EN, but it has more non-engineers than engineers. One participant mentioned that 'it is difficult to coalesce around being an engineer battalion when three of your companies are not engineers and one company is a mix of MOSs. Play up the engineer side of things and you risk alienating your MI and SC personnel. Downplay the engineer aspect and you risk pumping up your 12Bs and making them proud of who they are and their unit name.' Thus, it appears that forming a cohesive team of engineers and non-engineers in a unit strongly identified as engineer is perhaps one of the most challenging tasks for leaders in the BEBs.

The importance of the unit's lineage and honors ranged from very little to 'full-on.' At one end of the spectrum, one BEB was unable to acquire a single piece of historical artifact. On the end of the scale, another BEB was able to acquire a substantial and impressive amount of historical artifacts to show-case in a designated area within their BN headquarters. Due to the transformation, the history of this unit went from one dating a back a few years to one dating back to 1861. The new BN guidon also had very positive visual effects and a sizable increase in the number of campaign streamers. 'Playing up' this aspect of unit history and pride was easy for this BEB to do. From a leadership perspective, they praised the history and accomplishments of the deactivating BSTB while they simultaneously 'talked-up' the proud lineage and history of the new BEB. The Reflagging Ceremony provided the leadership with a great opportunity to speak about the unit history and to symbolically showcase the unit. Furthermore, this BEB also hosted an all-ranks Activation Ball at which previous leaders from the activating unit were invited to speak. Other comments on unit identity and history was the contemporary difficulty for units to build their own lineage and identity because there are no longer 'war trophies.'

Importantly, leaders need to recognize the value of bringing in all regimental customs, not just the engineers, and to allow the unit to have a MI and SC week. In sum, it is essential for leaders in the BN to have awareness of all branches in the BEB and to develop an inclusive command and unit climate and culture.

Discussion

The present research aims to identify common challenges and best practices for units transforming from a BSTB to a BEB (ABCTs) using an OTMLPF framework. Issues encountered in the cognitive, social, and cultural realms were also considered. In general, the principal challenge faced during transformation was finding the right balance in priorities of work between transformation-related tasks and daily operations. This challenge is not unique to BN-level transformation, as is the case with the BSTB to BEB conversion, and has been encountered in BDE-level transformations (Conrad et al., 2013; Triscari, 2005). A best practice identified previously (Conrad et al., 2013; Triscari, 2005) is to create a 'transformation' cell that focuses solely on transformation-related tasks. While this approach may be optimal, only one of the five BEBs surveyed here had sufficient personnel to form a dedicated 'ReOrg' cell to work on transformation-related tasks. Future transforming units would likely benefit from having short-term, borrowed military manpower to assist their transformations. The timing of the transformation relative to the unit's missions was also identified as influencing how well the transformation process occurred. Some units transformed while deployed to NTC or outside the continental United States (OCONUS), creating additional challenges of transforming with little or no reach-back support. An easier transition might be expected had transformation occurred during dwell time at garrison. Thus, more seamless transitions might occur in future transformations if units transform during dwell time at garrison, are resourced with additional temporary personnel and are protected ('fenced') from high OPTEMPO missions (e.g., NTC rotations, OCONUS deployments) and red-cycle and other taskings.

Numerous suggestions were offered on the future reorganization of the BEB. Participants thought that the combat power in the BEB was still lacking despite the addition of a second combat EN company. One suggestion was to add a third combat EN company in order to further enhance combat power and to permit attachment of each EN company to a CAB in the BDE. Such an alignment was thought to expedite the formation of better working relationships and training between the CAB and its attached EN element. Further, the asymmetric composition of the two existing EN companies, the lack of urgent or future anticipated needs for route clearance missions, and the shortage of organic security elements were the other main themes revealed in the Organization domain. The imbalance in engineer and non-engineer slots in critical command positions (CDR, CSM, XO, and S3) was also raised as a factor for consideration in any future redesign of the BEBs. Given the diversity in personnel, assets, and mission sets, having two engineers and two non-engineers in senior leadership positions was thought to provide a better balance to the unit. Responses on authorized equipment revealed a perceived deficit of equipment for mobility and counter-mobility operations. However, some of the identified insufficiencies (e.g., Volcanoes) are being addressed by the Army.

The main training challenges identified were the focus of training, synchronization of BEB and BDE training plans, and co-localization of BEB and BDE CPs. The present work

suggests that newly formed BEBs, at least in the initial BSTB to BEB transformation cycles, may have focused too much on training engineering tasks over non-engineering tasks. Thus, BEB leaders need to be aware of any potential imbalance in training across all companies. The synchronization of the BEB's training plans with those of the BDE's was also identified as an issue of concern. Previous research has highlighted the importance of developing a long-range training calendar for all units as part of a comprehensive training strategy prior to transformation (Triscari, 2005). Implementation of this practice would likely identify training and timeline issues before they develop into major problems. Another main challenge identified in training was the function and location of the BEB CP. Owing to the unique mission of the HHC (i.e., to provide mission command and supervision of the tactical operations of the BEB, ABCT, and all assigned/attached OPCON unit), the function and location of the BEB CP require productive discourse between the BDE and BN CDRs. A subject matter expert (SME) recommended that higher HQ codifies the training objectives of the BEB CP in a tactical standard operating procedure (TACSOP). In this way, the training objectives, roles, and span of control are clearly specified in a TACSOP and less likely to create friction between the BEB and higher headquarters.

The materiel challenges centered primarily on property surplus and accountability. The present study confirms previous findings (Conrad et al. 2013; Liffring & Southard, 2014; Triscari, 2005) that surplus property is a major challenge during transformation. One participant described having excess property as stifling the unit. Moreover, the problem can become protracted: more than two years after its transformation, one BEB still had excess property. Under the new MTOE, the BEB no longer had the mechanics to service the MP vehicles. Yet, the unit still had to maintain the vehicles to 10/20 standards for lateral transfers. The loss of maintenance personnel was also experienced by the 3rd Cavalry Regiment (3CR) when it converted from an Armor to a Stryker Brigade (Conrad et al., 2013). The lesson learned from that transformation was to keep maintenance personnel until the equipment they maintained is turned in (Conrad et al., 2013). However, transforming units may have very little, if any, control over personnel movement. As the unit acquires new equipment and turns in legacy and surplus items, the number of transactions required for property accountability is very substantial and labor intensive. One participant cautioned that while work on property divestiture and accountability is essential, care must be taken to prevent diverting too many personnel and resources to the detriment of daily operations and regular maintenance and servicing of authorized vehicles and equipment. Consequently, a fine balance must be reached between transformation-related and regular day-to-day tasks. Without external support from higher echelons, equipment turn in and accountability are likely to impact the unit's daily operations and training. Future transforming units would benefit from developing a detailed turn in plan for legacy, excess, and lateral transfer of equipment ahead of time (Triscari, 2005). Request for the dedicated support of the Property Book Officer to work with BEB staff on equipment transactions and accountability preceding and following transformation would streamline the process and likely make it more efficient.

Just as having extra equipment impacts the unit, the lack of equipment and facilities can also affect the unit's operations, training, and readiness (cf. Conrad et al., 2013; Triscari, 2005). In the present study, one unit was provided with insufficient ammunition for a BEB and did not receive their additional Bradleys in time for gunnery qualifications. For another BEB, daily

operations were made more difficult by the lack of common facilities for the entire unit, leading to dispersion of personnel and equipment in distant buildings and motor pools (see also Liffring & Southard, 2014). Although not identified as a transformation-related challenge here, the lack of digital connectivity has been reported elsewhere (Liffring & Southard, 2014). Future transforming units would benefit from being proactive in identifying potential issues in property accountability and maintenance, in being up-to-date on vehicle services, and in reaching out to relevant garrison leaders and personnel for base operations support. However, transforming units may have limited control over some issues, such as, the fielding of new equipment.

A further requirement for transformation was the transfer and integration of new personnel and equipment from the unit's old UIC to the new UIC on all applicable training and logistics management systems. This process was relatively easy for some units, but demanding for others. This discrepancy might be partly due to personnel not being trained properly beforehand to perform these tasks, and a lack of good pre-planning and coordination between BEB and BDE. For future transformations, units could potentially preempt the technical difficulties with UIC transfers by reaching out to SMEs for guidance. At a higher level, job-aids could be developed and shared across the organization to assist personnel in transforming units to perform these tasks effectively and efficiently. The Department of Defense's milSuite could be a potential site for hosting such tools.

In the Personnel domain, only one out of the five BEBs filled their slots with authorized personnel easily and ahead of schedule. A best practice identified from the current work is for BEB leaders to work proactively with BDE and/or Human Resource Command (HRC) to fill empty slots with qualified personnel. Finding the right officers to be the XO and the S3 was emphasized as both need to understand the diverse systems, training, and capabilities in the BEB. One significant issue for the S3 section is to have a qualified Bradley MG. Any future redesign of the BEB might authorize an OPS/S3 Bradley MG in the S3 section, as is the case in infantry and/or cavalry BNs in ABCTs, rather than take an NCO 'out of hide' from the S3 section.

The BEB CDR faces many challenges before and throughout the transformation process. The challenges identified fell in multiple domains including those mentioned above as well as in leadership and education, cognitive, social, and cultural. It is important that the CDR provides clear intent on the priorities of work during the unit transformation. Owing to the diversity in personnel, assets, and missions, the CDR also has to acquire the requisite knowledge in non-engineer areas. Suggestions for developing such knowledge include expanding the topics covered in BEB pre-command course and attending SC courses at Fort Huachuca. This issue was perceived to be less problematic for second and follow-on generations of BEB CDRs who likely would have acquired substantial knowledge of non-engineer capabilities of the BEB while serving as a BEB XO and/or S3. These observations are consistent with previous recommendations for leaders to understand the new unit's missions and capabilities (Conrad et al., 2013; Triscari, 2005).

In addition, the BEB CDR is expected to lead Soldiers from various and dissimilar MOSs in a BN that strongly identifies with the Engineer Regiment. To do this effectively, the CDR has to (a) create and reinforce the mindset that they are enablers and exist to support the BDE, (b) develop a cohesive unit among different and diverse teams, and (c) create an inclusive command

climate and culture. Some suggestions for building esprit de corps include conducting inclusive team-building events (e.g., 10K runs, Organization Day), allowing each of the major branches to have a MOS-specific week to showcase their expertise, and focusing on commonalities among Soldiers (e.g., basic warrior tasks) instead of differences. Similarly, team building activities that develop and strengthen unit cohesion were also considered important for BDE-level transformations (Conrad et al., 2013; Triscari, 2005).

To prepare for their unit transformation, some senior leaders held information and LPD sessions. They ensured that information on unit transformation was disseminated, identified any concerns and addressed them as soon as possible. The LPDs sessions covered topics such as the new role of the unit and what the BEB brings to the fight, enabling senior leaders to convey new ways of thinking and interacting. This practice, however, was not common for all BEBs involved here, but is one that would be recommended for future transforming units (cf. Conrad et al., 2013; Triscari, 2005). Information and LPD sessions provide excellent opportunities for senior leaders to educate and coach their junior leaders and Soldiers and to set the right milieu for the formation and development of their new unit. Conducting town hall meeting with Soldiers also provides an excellent venue to identify gaps in knowledge and to hear and address any concerns Soldiers may have on the unit transformation.

The BEB CDR and other senior leaders also need to reach out to leaders in sister BNs and inform them of the unit's new role, contributions, and capabilities. As a support element for BDE, senior leaders in the BEB need to develop and maintain excellent working relationships with senior leaders and staff officers at BDE. Discussion topics for the BEB and BDE CDRs include training plan timelines and synchronization, location and function of the BEB CP, role of the BDE S2 and S6, and role of the BDE HHC. While the role of the BDE HHC was not raised as a major issue here, friction can occur if roles and responsibilities are not clearly delineated (see Dillard, 2014).

Complementary to changes in cognitive and social processes, the unit also has to foster a culture of being good enablers and attachments (see also Dillard, 2014). Formation of such a culture can be difficult in a unit that strongly identifies as an EN BN: drawing upon the unit's lineage and honors can work for and against creating unit pride and cohesion. Too much reliance on the unit's history which is engineering-focused can serve to alienate non-engineers. However, BEB leaders could use the unit's lineage and honors as a platform for creating their own unique history that encompasses the major, if not all, branches in the BEB.

In summary, the present research identified the major challenges encountered by units transforming from a BSTB to BEB (ABCT). Some challenges (e.g., property accountability and excess equipment) appear common to all transformations regardless of unit type or echelon, whereas other challenges (e.g., lack of Bradley MG slot in S3, insufficient mobility and counter-mobility equipment) are specific to the BSTB to BEB transformation. The lessons learned and best practices were drawn from the BSTB to BEB (ABCT) transformation adds to existing knowledge (Center for Army Lessons Learned, 2015; Conrad et al., 2013; Dillard, 2014; Liffring & Southard, 2014; Triscari, 2005) to better inform and prepare future units for transformation.

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Appendix A
Interview Questions

Organization

1. If you had the authority, what changes would you make to the BEB organization?

2. Were there instances where you needed to task-organize personnel in order to address unit needs? What were these instances?

3. Were most organization-specific challenges encountered early in the transformation process or did they become known after significant changes had occurred? How did you address those challenges?

Training

4. What were the challenges to maintaining training readiness, and what techniques mitigated these challenges?

5. How were training aids, devices, displays, simulations, and simulators used, and were they sufficient, available, and relevant?

6. How did the planning, resourcing, and execution of training need to evolve as a result of the unit transformation? What were the second and third order effects to the changes in training (if any)?

Leadership & Education

7. What type of team building and/or combined arms training were the most effective for developing leaders?

8. What effect did transformation have on the unit cohesion that existed previously? What steps were taken to promote cohesion (if any)?

9. What were the challenges to acquiring required education and attending schools? For example, certain personnel not attending courses due to unit transformation duties. How did you alleviate these challenges?

10. When and in what areas did most leadership challenges occur?

Personnel

11. What were the challenges to maintaining personnel readiness, and what procedures did you use to mitigate these challenges?

12. What are the personnel management challenges for the diverse number of career fields and MOS found in the BEB?

13. When were most personnel challenges encountered?

Cognitive processes (e.g., different ways of learning and thinking during transformation)

14. With all of the changes that were taking place during transformation, how did the unit's way of thinking need to change with regard to performing its mission?

15. How did senior leaders communicate the changes associated with transformation and the intended endstate to subordinates?

16. What were the barriers to thinking about training and leadership and how were they overcome?

17. What were some of the lessons learned from trying to incorporate these new ways of learning into the transformation process?

18. How can these lessons learned be incorporated into future transformations?

Social processes (e.g., interactions within/outside the BEB)

19. Did the training received during transformation prepare individuals/units to effectively interact within the BEB?

20. What were some of the challenges encountered and how were they overcome?

21. How can these lessons learned be incorporated into future transformations?

22. How about interactions with other battalions within your ABCT and with Brigade HQ? What sorts of challenges have you encountered with communicating with these units?

23. How can these lessons learned be incorporated into future transformations?

Cultural processes (e.g., how do leaders change attitudes and actions around new ways of training or accomplishing the mission)

24. What were some of the cultural challenges (e.g., resistance, motivation) encountered during your transformation process? Please explain.

25. How did these challenges affect your overall transformation?

26. How were these challenges overcome?

27. How can these lessons learned be incorporated into future transformations?

28. How did leaders communicate the changes associated with transformation to spouses and family members?
    a. Was this an effective approach?
    b. What were some of the challenges encountered and how were they overcome?
    c. How can these lessons learned be incorporated into future transformations?

29. What were some of the challenges faced by spouses and family members during transformation?
    a. How were these challenges overcome?
    b. How can these lessons learned be incorporated into future transformations?

30. When were most spouse and family member issues encountered?

Other information

31. Do you have any additional comments about transformation of BSTBs to BEBs in general, transformation of your unit, the transition process that your unit underwent/undergoing?

32. Do you know anyone else who might be interested in this research? How could we contact them?