The Importance of Research and Analysis to the Military

Director General Capability

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Contents

- A bit of history
- Centralisation
- Operations
- Decentralisation
- Evidence Based Decision Making
WW1 – ‘The Chemists War’

- First large scale mobilisation of ‘science’

- Emergence of poison & advanced high explosives

- Physicists’ contribution
  - Wireless communications
  - Sound based detection methods

Battle of Estaires, 1918
WW2 – ‘The Physicists’ War’

- Heavy German and Allied Investment
  - German Nuclear Energy Project
  - US Office of Scientific Research and Development (origins of the Manhattan Project)
- Rocket Science
- Long Wave Radar

Hiroshima, March 1946
The Cold War

- Scientific research continued benefit from military patronage during era of perceived imminent threat
  - Computer science and engineering shaped by military funding
  - Geosciences and astrophysics
  - Biological sciences
Centralisation

- McKinsey
- The Central Customer
- The rise of ‘joint’
- Pressure Groups
Urgent Operational Requirements (UORs)

- Research pivotal during last decade
- > 5 billion spent on UORs since 2002
- 85% on force protection
- > £50 million on infantry kit
- > £50 million on medical kit

Indicative ‘on the man’ cost in 2001 (adjusted to 2013 prices): £1,200

Indicative ‘on the man’ cost for Afghanistan (standard): £33,500
No Holiday Post Afghanistan

- 2010 SDSR assumptions
  - Defence not ring-fenced
  - Defence £38bn black hole
- Army re-organisation
  - Army 2020
- De-Centralisation
Policy baseline

- Enduring Stabilization (6.5K)

- Complex Intervention (2K)
- Focussed Intervention (1K)
- Focused Intervention (1K)

- Non-enduring Intervention (up to 3 Bdes)

"Best Effort"
Types of Army Role 2015-2020

- Homeland defence and security support
- Small scale expeditionary operations
- Alliance reassurance operations
- Divisional level warfare preparations
“The Department should make increased use of evidence in decision-making” (Levene Report)
Evidence Based Decision Making

- Portfolio Level
  - Balance of Investment

- Programme Level
  - Financial Scrutiny
    - VfM
    - Competition
  - Requirement Scrutiny
  - Technical Scrutiny

- Boundaries
Concept to Capability

- Concepts
- Cap Strat
- ‘How We Should Operate’
- ‘How We Propose to Operate’

Land Environment Capability
- CONEMPs
- CMPs
- CONUSEs

'How We Should Operate'

Develop

Deliver

- GST
- Env & Threats
- FLOCS
- UNIFIED
- FASOC
- FOE 35
- QUEST
- Tech Horizon-Scanning
- FCOC
- Navy Vision
- AGILE WARRIOR
- Overseas Concepts
- US Strategic Landpower

Land Environment Capability
AGILE WARRIOR

- Examination of weaknesses, threats, challenges and opportunities for Army capability within a JIIM context.

- Generates evidence-based analysis to inform:
  - Army’s narrative of what capabilities land forces require in the future
  - Continual transformation across all DLoDs.

- Underpinned by Master Question List and Integrated, Analysis and Experimentation Campaign Plans (IAECPs).
MQ 1. What are the characteristics of the FLOE?

MQ 2. How will land warfare develop and what contribution will land forces be able to make to future requirements?

MQ 3. What capabilities will Land Forces require to deliver operational success in the future?

MQ 4. What might change?

MQ 5. What balance of affordable capabilities is required by Land Forces to deliver operational success?
Capability Development Architecture with MQs

- Current Force: In-service now
- Funded Force: In the funded programme
- Future Force (FFD): What we think we want
- Conceptual Force (CFD): Opportunities for future requirements

Informing
Forecasting
Resolution of Detail
AGILE WARRIOR Framework

Ground Manoeuvre
- MCC
- DCC
- Land Fires
- EOD&S
- MWA
- Mil Eng
- Mil Policing

Command (WOLFE)
- C4ISTAR
- Influence Activity and Outreach
- CEPP

Air Manoeuvre
- AM
- ES Avn

Land Environment Enablers
- Logistics
- ES Land
- Land Med
- Trg Systems

Development Agenda
- Air Despatch
- Air Mobility
- Avn Assault
- Air Land Integration

KEY
Existing Capability Planning Groups (16)
Subsidiary considerations
Q1 - How can Live, Virtual and Constructive (LVC) simulation methods for experimentation be used to provide complementary analysis for evidence-based decision making?

Q2 - How can the effectiveness of the AI Coy Gp in 2020 be improved for Urban Operations?
Within the 3 simulation domains capability changes were assessed against mission effectiveness

- Infantry mass v reduced armour v enhanced C2/SA v alternative ROEs

Significant evidence was collected to support land capability development for urban operations

Robustly assessing group effectiveness requires a combination of LVC methods to mitigate the inherent weaknesses of the individual simulation domains

- Constructive – good for kinetic effect, multiple runs and experimental control
- Live – good for representing C2/SA, human factors and operational friction

Lessons were also learned on the A&E process, on governance, funding, timescales, etc.
● Provides a practical guide for commanders, Army HQ staff and Formation/Unit staff in the design, planning and conduct of FD related A&E

● Implementing best practice
Generating A&E campaign plans (IAECPs) for AGILE WARRIOR themes:

- What are the key Questions, their priority, and what will the output inform?
- Are they being answered already?
  - In CSA’s S&T Programme
- What is the most appropriate method(s) for answering them?
- Do we need to initiate a new study to answer it?
IAECP Evidence Exploitation

Integrated A&E Campaign Plan (IAECP)

Questions > Existing Studies > Proposed Studies > Evidence

- Inform Capability Management Strategy (CMS) and Capability Management Plans (CMPs)
- Capability BoI to inform CMG decisions and Prog initiation
  - Genesis Option, IG/MG evidence of need and numbers
- Inform Concepts and Doctrine
- Inform senior Army Decision Makers (AFDC > ECAB)
- Influence defence policy (via Head Office)
- Request S&T (through Research Objectives)
- Evidence in support of the Capability Audit
- Further study > A new/revised analysis question
- **Force Testing** – Dstl have used a variety of simulation models to assess land capability across the policy mandated scenarios.
  - Included a deployment and operational effectiveness comparison of the VHR BGs.

- **Force Exploration** – these scenarios/models will now be used to address IAECP Questions.
Future Land Conceptual Wargaming Cycle

- Aim - derive capability requirements beyond the funded programme within a range of plausible alternative futures

- The outcome will be used as evidence to drive future force design
Growth areas: Wargaming and Historical Analysis

- **Wargaming**
  - DG Cap Strat team have undertaken a Mali game to assess capability. An Iraqi game is planned.
  - 3(UK) Div recently conducted a seminar wargame on Mali and have asked for their own wargaming tool in order to assess their plans.

- **Historical Analysis**
  - Now being used by DG Cap Concepts and Strat teams to address FD questions.
Challenges for Analysis

- Land Capability Balance of Investment
  - Assessing AFVs v Aviation v Comms v Med v Logs
- Providing robust evidence to support the Army’s future investment in capability
  - 2nd decade: vehicle and helicopter fleet, fires support
  - Beyond: what technologies will have the greatest impact on land combat and how?
- Establishing ICS baseline performance now in order to demonstrate the of operational benefit of LE TacCIS
- Being able to assess HQ performance in alternative ways to a major experiment/exercise
- What is the impact of investing in Defence Engagement?
AGILE WARRIOR - Command

- Development Agenda
  - AGILE WARRIOR
  - Ground Manoeuvre
  - Command (WOLFE)
  - Air Manoeuvre
  - Land Environment Enablers
    - Project HORROCKS
    - Project CALVERT
    - Project LION’S LEAP
      - Project URQUHART
        - Ex COMBINED ENDEAVOUR
        - Ex NIE
        - Ex ROCHAMBEAU
        - Ex AQUA TERRA
Ex URQUHART: 2014 Investigation into future provision of C4ISR information capabilities to support the Brigade Headquarters level and below. Focus is the 2018-2023 timeframe with deductions informing further DFD led experimentation for 2023 and beyond.
Project URQUHART: Operational C2 concepts for analysis

Model A: Focussed Intervention - LATF under Div Adv
- JTFHQ
- DiV Adv / LCC
- LATF

Model B: Complex Intervention - AI Bde under HORROCKS Div
- CJTFHQ
- DIV
- AI Bde
- Other 1*

Model C: Enduring Stabilisation - AI Bde in CJEF 2* HQ
- LCC
- DIV
- AI Bde
- Other 2*
- Other 1*

Focus for Analysis
Examples: (most activities applied to both theatres)

Campaign planning and assessment
Patrol reports and observations
Opinion polling and surveys
SIGACTS analysis
Counter IED analysis
Effect of Ramadan
SAFIRE risk to helicopters
Base closure and redeployment

- Combat modelling
- Casualty estimation
- Medical bed space requirements
- Logistic and movement planning
- Risk from indirect fire
- Risk of snipers

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Supporting Operations

- Deployed to: Bosnia, Kosovo, Italy (for Balkans and Libya), Qatar and Kuwait (for Iraq), Iraq, Afghanistan and Bahrain.

- Helped plan from UK: ops in all the above plus East Timor and Sierra Leone.

- UK Ops: fuel strike, firefighters strike & flooding.

- Over 800 individual Dstl deployments/ visits.

- Over 100 Dstl person-years in theatre.