Airpower
For
Hybrid Warfare

May 2009
Overview

• Types of Warfare early in the 21st Century
• Strategies to achieve US objectives
• Aerospace Forces as a foundation for national response
Warfare in 21\textsuperscript{st} Century
- Conventional Warfare

\begin{itemize}
  \item **Air**
    \begin{itemize}
      \item SA-10 (125 mile range) -- deployed in 18 nations
      \item SA-20 (250 mile range) -- deployed in 3 nations
      \item MiG-33/SU-30 – near stealth capability in 3 nations
      \item J-XX and FA PAK -- F-22 rival under development
    \end{itemize}
  
  \item **Land**
    \begin{itemize}
      \item T-90 Tank
      \item Explosive Reactive Armor
      \item IR countermeasures
    \end{itemize}
  
  \item **Sea**
    \begin{itemize}
      \item Diesel submarines – 43 nations with 405 total inventory
      \item Cruise missiles – 75 nations with ranges to 200 nm
      \item Torpedoes – high speed (200 knots), super cavitating
    \end{itemize}
\end{itemize}

Belligerents are fielding capabilities to deny U.S. conventional superiority
Warfare in 21st Century
- Irregular Warfare

- **DoD defines IW as:** “violent struggle among state and non-state actors for legitimacy and influence over the relevant populations.”

- **IW Joint Operations Concept expands:**
  - Insurgency & Counter-insurgency
  - Unconventional Warfare
  - Terrorism & Counter-terrorism
  - Foreign Internal Defense
  - Stability, Security, Transition and Reconstruction
  - Strategic Communications
  - Psychological Operations
  - Information Operations
  - Civil-Military Operations
  - Transnational criminal activities

**2006 DoD Quadrennial Defense Review Report**

**DoD viewed IW and Conventional Conflicts as separate and distinct**
SECDEF Gates on Irregular Warfare

• “Support for conventional modernization programs is deeply embedded in the Defense Department's budget, in its bureaucracy, in the defense industry, and in Congress. My fundamental concern is that there is not commensurate institutional support -- including in the Pentagon -- for the capabilities needed to win today's wars and some of their likely successors.”

• “One can expect to see more tools and tactics of destruction -- from the sophisticated to the simple -- being employed simultaneously in hybrid and more complex forms of warfare”

  - Foreign Affairs, Jan./Feb. 2009

DoD senior leaders recognize the evolving nature of conflict
Afghanistan – 2001

• Weapons
  - Small arms
  - RPGs and mortars
  - IEDs

• Organizations
  - Warlords
  - Taliban
  - al Qaida

• Tactics
  - Ambush
  - Intimidation
  - Small-moderate size force
    • 60 hour pitched battle with 173d Brigade, July 2008
    • Ambush of French Patrol, July 2008
Iraq – 2003

• Weapons
  - Small arms
  - RPGs and mortars
  - IEDs and EFPs
  - UAVs from Iran?

• Organizations
  - Former Regime Elements
  - al Qaida
  - Local insurgents
  - Flat, flexible and varied

• Tactics
  - Simple ambush – 88%
  - Complex attacks – 12%
Lebanon - 2006

• **Weapons**
  - AT-13 & AT-14 anti-tank
  - 122 Katyusha Rockets and Mercedes trucks
  - C-802 Cruise Missile
  - *Mohajer* UAV

• **Organizations**
  - 2,000 – 7,000 civilian-warriors
  - 500 ‘core’ fighters
  - 7-10 man cells
  - Hierarchical leadership – Decentralized execution

• **Tactics**
  - Ambush
  - Engaged fights
  - Re-attack to regain land
Mumbai - 2008

• Weapons
  - Automatic Weapons
  - Blackberries and Cell Phones
  - GoogleEarth
  - GPS

• Organizations
  - Small cadre

• Tactics
  - Ambush
Nation-State
- Irregular Capabilities

North Korea SOF
- 60,000 troops
- Infiltrate South Korea by air, land and maritime means
- Attack military, political and civilian targets
- Disrupt military operations and reduce the population’s confidence in the government

Iran
- Iranian Revolutionary Guards
- Separate from Armed Forces
- 125,000+
  - 75% “Reservists”
  - Air, land and maritime
- Cooperates with foreign military/belligerent forces
  - Lebanon
  - Iraq
Cyber-Threats
- Nation-States & Non-State Actors

1945: Navy computer damaged by moth—resulted in term bug and debugging
1979: Xerox engineers develop first computer worm
1972: AT&T fights Captain Crunch whistle “tone generators” used to make free calls
1982: FBI busts hackers who use Apple II computers to access government networks
1986: First PC virus (The Brain” released by Pakistani programmers
1988: 23 year old disables 6,000 computers with virus.
1983: Term “computer virus” first used
1994: “Good Times” hoax virus spreads via e-mail
1999: “Melissa” virus causes $80m in damages
1998: Two California teenagers take control of 500 military computers
2000: Multiple high profile web sites knocked offline following denial of service attack
2001: “Code Red” worm causes $2B in damage
2001: “Nimda” virus hits thousands of computers. Terrorists suspected
2002: “Klez” worm destroys billions of files
2002: Massive denial of service attack
2003: “Slammer” worm delays airline flights & disrupts ATM network
2000: Filipino college student launch “ILOVEYOU” causes $10 billion in damage
Understanding Hybrid Warfare

• Hybrid Wars:
  - Conducted by State and Non-state actors
  - Employ conventional capabilities, irregular tactics and formations
  - Focus on fielded military forces and indiscriminate violence on civilians
  - Fuse multi-modal activities - by same or different units
  - Involve highly disciplined, well trained, and distributed cells
  - Span of geographic settings - isolated terrain to complex urban areas

• Hybrid Belligerents
  - Not constrained by international laws or norms
  - Are adaptive and flexible
  - Seek to avoid US military strengths while exploiting their “advantages”

Traditional warfare and IW are not mutually exclusive; both forms of warfare may be present in a given conflict

*Air Force Doctrine Document 2-3*
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Overview

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• Strategies to achieve US objectives

• Aerospace Forces as foundation for national response
Crafting an effective Hybrid Warfare Campaign

- **RAND:** *Lessons Learned from Past Counter-insurgencies*
  - Legitimacy of government is paramount
  - Successful IW requires a government providing
    - Effective **security**
    - Distribution of **electrical**, **food** and **water**
    - Functional **medical** care
    - System of **justice**
    - Functioning **economy**
    - **Educational** opportunity
    - Means of **political** expression in a civic society

"Hezbollah in southern Lebanon offers a template for the militarily sophisticated hybrid threat we will face. To succeed, we are going to depend on others in and out of government, and by using indigenous forces in applying all the elements of power."

*CSA George Casey, January 2008*
Hybrid Warfare
- Non-Military Partners

• Federal Agencies can and are providing key skills and expertise needed to build a functioning civil society
  - Health and Education
  - Police and Justice
  - Economic and monetary
  - Municipal services: water, electricity and food

• Allies
  - Have niche capabilities to conduct and support IW campaigns
  - Assist in building partner capacity
  - Assist in fostering a civic society responsive to host nation’s citizens

• International agencies can provide support for building civic society and delivering humanitarian support

• Contractors are and will be present to provide a range of support
  - Security
  - Reconstruction
  - Logistics for military, federal, international and non-governmental agencies
Example of Non-Military Partners in Action
- Provincial Reconstruction Teams (PRTs)

- **Composition** - diplomats, military officers, development experts, and specialists in law, engineering, industrial development, urban planning, and agribusiness from many U.S. Federal Agencies and the private sector

- **Leadership** - international in nature (US, UK, Italy, and Korea)

- **Objectives**
  - **Bolstering Moderates** -- reach out beyond the central government to identify and empower those who reject violence as a means of achieving their goals.
  - **Promoting Reconciliation** -- fostering improved communication and cooperation and the equitable use of Iraqi resources.
  - **Fostering Economic Development** -- targeting financial assistance, such as micro-loans and grants, to help create small businesses and jobs, and develop capacity for effective and sustainable governance.
  - **Building Provincial Capacity** -- assisting local officials, helping them more effectively interact with the central government and local citizenry

Source: USINFO at USINFO.STATE.GOV
Hybrid Warfare Partners

Military and Intelligence Capabilities

Partner Nations

Security

Federal Agencies and International Organizations

Economic
- Legitimate
- Opportunity

Justice
- Legal System
- Grievances

Political
- Tribal
- Clan
- Minorities

Services
- Food
- Water
- Energy
- Health Care
- Education

Civilian Contractors augment efforts in all spheres of activity
Overview

- Types of Warfare in early 21\textsuperscript{st} Century
- Strategies to achieve US objectives
- Aerospace Forces as foundation for national response
Military Capabilities
- Valued to the Hybrid Conflict

- Provide lethal and non-lethal effects
- Provide kinetic and non-kinetic capabilities
- Impose costs on potential adversaries who attempt to counter U.S. capabilities or operations
- Reduce risk to operational forces and for political leadership
- Have value to all forces and across all components
- Be insensitive to adversaries’ anti-access strategies and capabilities
- Enhance manpower by leveraging technology
Aerospace Forces
- Attributes

- Speed
- Range
  - Distance
  - Coverage
- Firepower/Effects
- Persistence
- Survivability
- Adaptability

Vertical Dimension
Layering ISR
- Maximizing Persistent Awareness of the Battlespace

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Layering ISR assets provides precise data:
- Where (geo-location)
- When (timing)
- Accuracy (speed, signal type, characterization, picture, etc)
ISR
- Placing the value in context

Afghanistan
- 32 million people
- 251,000 nm$^2$
- 55,000 Coalition troops
  - 1 Soldier / 4.5 nm$^2$
  - 1 Soldier / 581 people

How do U.S./Coalition civic building elements and military forces
- cover the area?
- gain awareness and knowledge
- provide adequate response
## Tactical Airborne ISR Today
- Army and Marine Maneuver Units

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**Ground tactical commanders:**
- Primary ISR support is Imagery or FMV
- Have little access to surveillance information
- Need support from theater assets
# Tactical ISR Tomorrow
- Filling Informational Gaps

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**ISR**
- Air vs Land based sensors

**Ground**
- Antenna @ 50’ AGL = 12 nm
- Antenna @ 500’ AGL = 27 nm
  - Area coverage - 2,290 nm²
- Types of information: SIGINT, IMINT, Movement surveillance

**Air**
- 30,000’ AGL = 212 nm
- 60,000’ AGL = 301 nm
  - Area coverage - 284,000 nm²
- Types of information: MTI, SIGINT, IMINT, MASINT, FMV

**Airpower provides greater coverage and quantity of ISR information**
ISR
- Air based sensors

60,000’ allows sensors to observe 3 x surface area in vertical terrain
E-8 Joint STARS:
- Sweeps wide area and detects movement of enemy forces
- Provides spot, detailed MTI tracking
- Provides spot, detailed Radar Imagery
- Enables cross-cuing of other EO/IR/Full Motion Video assets for ‘staring’
Mobility
- Assured Support – Anywhere, Anytime

- Deploy resources rapidly – inter-continental or intra-theater
- Medical Evacuation
- Humanitarian Operations
- Sustain the force
  - Joint Precision Air Drop (JPAD)
  - 16.5 million pounds airdropped in OEF
  - Sustain all tactical fighting positions

JPADs has saved soldiers lives

U.S. Army Statement
**Strike**
- Game changer in action

- Hybrid Warfare yields initiative to adversary
  - Reliance on light ground forces
  - Rapid transition from “presence” mission to combat mission

- Close Air Support
  - Presence for deterrence
  - Lethality with Precision effects
  - Equalizer for lightly armed ground units
  - Place any target at risk – deny adversary ability to move
  - Missions: Escort, tactical ISR, Strike

Afghan insurgents have learned to attack U.S. troops and scatter before they can be hit by airstrikes

*USA Today, Jan 2009*
Command and Control
- Integrating and Guiding – theater-wide

When the Air Domain is secure... the Air Component focuses on others’ requirements
Command and Control
- Integrating and Guiding – tactical level

• Joint Tactical Air Controllers
  – Planning, integrating and executing at the lowest possible level
  – Tactical Operations Center focal point for melding air and ground operations
  – Corps to company level

• ROVER
  – Shared cockpit video images
  – Upload targeting data to aircrews

When CAS is on station, it greatly reduces the threat. If we do get hit, only a handful of enemy troops will be brave enough to fire.

SSgt Chris Summers, 101st Airborne Division
Airpower and the Joint Team

Land Forces - Presence among the people

Maritime Forces

ISR  Mobility  Strike  C²

Aerospace Forces - Foundation for the Joint Team

Enabling the secure environment for other instruments of power
Hybrid Warfare Partners

Military and Intelligence Capabilities

Partner Nations

Security

Federal Agencies and International Organizations

Economic
- Legitimate
- Opportunity

Justice
- Legal System
- Grievances

Political
- Tribal
- Clan
- Minorities

Services
- Food
- Water
- Energy
- Health Care
- Education

Civilian Contractors augment efforts in all spheres of activity
Airpower and the Hybrid Warfare Team

Airpower has the potential to:
- Collect information for the entire Hybrid team
- Sustain the Hybrid Team
- Serve as the C2 integrating force for the Hybrid Team
Opportunities
- Improving the value of Aerospace Forces

• C2
  - Expand digital, internet-based planning and execution tools to include
    • Inputs from non-military partners
    • Outputs to non-military partners
  - Expand ROVER and JTAC level information beyond video-only feeds
    • SIGINT
    • MTI
    • Still Imagery from other sensors

• ISR
  - Expand distribution and exploitation below brigade level – to battalion, companies and platoons (see ROVER)
  - Expand available platforms with more robust sensors
    • SIGINT
    • MTI
    • MAINT
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- Filling Informational Gaps

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<td>Fire Scout</td>
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</tbody>
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Warrior, Fire Scout and ACS expand commanders knowledge and understanding of their battlespace.
Aerospace Forces
- Foundational Role

[Diagram showing relationships between Joint, Air, Agencies, Allies, Land, Sea, and NGOs]
Summary

• Warfare early in the 21st century will be reflect a convergence of conventional weapons and unconventional tactics and organizations
  – The U.S. will face not two distinct types – but a single Hybrid form of war
  – State and non-state actors will embrace this new style of warfare

• U.S. response will require a greater degree of planning, integration and execution off ‘all elements of national power’
  – Non-military, civic building capabilities will be high demand
  – Allies and NGOs will play a role

• Aerospace forces will provide the foundation
  – ISR
  – Mobility
  – Strike
  – Command and Control