The Transformation of American Airpower

Presentation to the Symposium on

The Transformation of American, Canadian, and Danish Airpower

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The Transformation of Airpower Embodies the Convergence of Two Streams of Theory and Doctrine

- **All airpower concepts seek to exploit the advantages of operating in the vertical dimension**
- **But thinkers have debated how airpower should be employed to exploit those advantages most effectively**
  - **As an independent instrument at the strategic level of war, or…**
  - **In combination with surface forces at the operational level of war**
- **Transformation brings these opposing streams of airpower thought into convergence**
  - **Support from space and cyber creates an integrated operational domain**

To Develop This Argument, I Will Lead You on a Walk From the Past to the Future

- The emergence of airpower as a concept
- The first concerted test—doctrines applied and lessons learned in World War II
- The decline and subsequent renaissance in airpower thought during the Cold War
- Convergence in theories about military transformation
- Challenges as we move into the future

Airpower Was Conceived as an Alternative to the Horrors of World War I Trench Warfare

- **Technology would enable military forces to avoid a repeat of stalemate and attrition warfare**
- **Visionaries recognized the unique capabilities of aircraft**
  - **Move quickly in any direction without obstruction of terrain**
  - **Overfly enemy forces and attack them from above, anywhere on the battlefield**
  - **Take war to the heart of the enemy's society**

Theorists Saw Airpower as a Strategic Weapon, Independent of Surface Forces

- **Italy's Douhet: bombing civilians would break a nation's will to wage war**
- **Britain's Trenchard: bombing industrial neighborhoods would break enemy will and capability**
- **America's Mitchell and ACTS: bombing industry would break enemy capability**

Most Interwar Air Services Saw Airpower as a Force Multiplier For Surface Warfare

- Germans and Russians interested in strategic bombing at first, but later shifted emphasis to attack aviation
  - Traditional land powers
  - Technological limitations
  - Blitzkrieg and Deep Battle
- Japan occasionally bombed cities, but air services lashed to the Army and Navy
  - Technological limitations
  - Institutional straight jackets
- Italian Air Force paid lip service to Douhet, but rejected his theory

World War II Revealed the Dramatic Effectiveness of Airpower at the Operational Level of War

- **Blitzkrieg crushed Poland and France**
  - **Light bombers and fighters destroyed enemy air forces on the ground and in the air**
  - **Airborne and glider forces seized key points behind enemy lines**
  - **Stukas beat a path for the Panzers**
- **But Luftwaffe failed to win the Battle of Britain**
  - **Unable to gain command of the air**
  - **The "Blitz" failed to break British morale**
- **Soviets "out-Blitzkrieged" the Germans with Deep Battle doctrine**
  - **Coordinated attack aviation with multi-echelon armor attacks**
- **Japan achieved tactical surprise against the US Fleet at Pearl Harbor**

RAF and USAAF Employed Doctrines Based on Interwar Airpower Theories

- **RAF and USAAF organized a combined bomber offensive (CBO)**
  - **RAF did nighttime area bombing to destroy industrial sectors of cities**
  - **USAAF did daylight, high-altitude, "precision" bombing aimed at nodes of Germany's industrial web**
- **Strategic effects of CBO were indeterminate**
  - **Did not break Germany's will or capability to wage war before German army's defeat**
  - **Targeting emphasis shifted; attacks on synthetic oil probably most effective**
- **Japan's surrender after the atomic bombings appeared to validate the claims of airpower theorists**

Early Cold War Airpower Thinking Fell Victim to Its Own Success

- **Airpower became synonymous with atomic/nuclear bombardment**
  - **Despite the Korean War, USAF and policy makers assumed all future wars would "go nuclear"**
- **Good for USAF budget, but skewed planning, training, and equipping**
  - **SAC nuclear bombardment dominated**
  - **Fighter designs focused on interception**
  - **TAC focused on delivering tactical nukes**
- **Strategy considered too important to leave in military hands**
  - **Entrusted to "strategy intellectuals" with USAF relegated to means of delivery**
  - **USAF PME and SIOP envisioned WWII-style strategic bombardment with nukes**

This Left the United States Ill-Prepared for the Vietnam War

- **USAF did poorly in the first years of the war**
  - **Negative kill ratio in air-to-air combat**
  - **Aircraft unsuited to CAS and interdiction; over 400 F-105s lost, mostly to ground fire**
  - **C2 problems—route packages; bombers controlled by SAC, versus theater air commanders**
- **US air services had to relearn the operational lessons of WWII**
  - **Equipping and training for air superiority**
  - **Unity of command under an airman**
  - **Coordinating air and ground operations for synergistic effect**

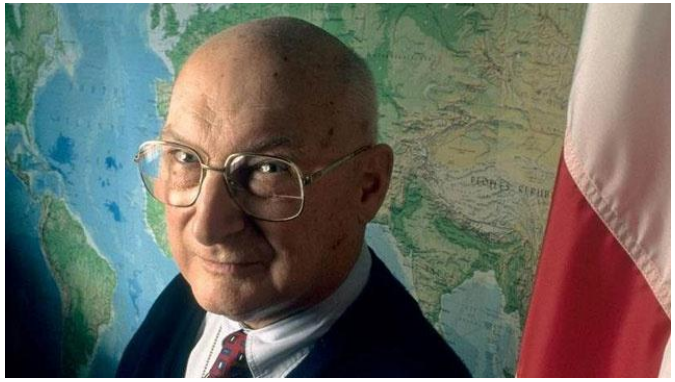
Vietnam Fueled a Renaissance in Conventional Airpower Thought at the Operational and Strategic Levels of War

- **Army TRADOC partnered with TAC to develop AirLand Battle Doctrine**
  - **Army would call on CAS and air interdiction to help destroy multi-echeloned Soviet armor forces**
  - **Evolved into offensive, high-speed maneuver warfare doctrine**
- **USAF applied Vietnam lessons to weapon system development**
  - **F-15 optimized for air-to-air combat**
  - **F-16, a self-defending strike aircraft**
  - **A-10, a heavily-armored ground attack aircraft**
- **New theories developed on creating and exploiting operational and strategic effects**
  - **John Warden's "enemy as a system"; strategic paralysis**
  - **David Deptula's effects-based operations**
  - **John Boyd's "OODA-loop" and decision cycles**

Operational and Strategic Concepts Began to Converge in the First Gulf War

- **Phased campaign showcased the effectiveness of airpower**
  - **38-day bombardment followed by a 100-hour ground operation**
  - **Command of the air quickly established**
- **Targeting emphasis shifted over the course of the campaign**
  - **Began with heavy focus on IADS and strategic targets**
  - **Shifted to interdiction targets and fielded forces as D-Day neared**
  - **Supported the ground operation in ways consistent with AirLand Battle Doctrine**
  - **<u>However</u>, continued pressure on strategic targets throughout the campaign**
- **Strategic attacks created synergistic effects at the operational level of war**

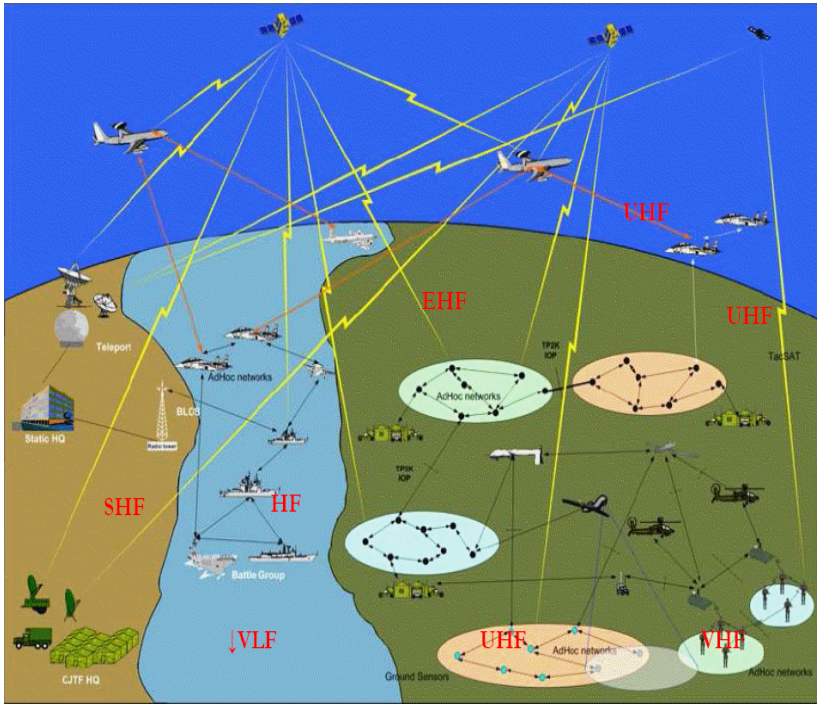
The Gulf War's Dramatic Outcome Triggered the Theoretical Development of Transformation



- Soviet military analysts had feared that the United States was on the cusp of a "military technological revolution"
  - Precision-guided weapons, stealth, information systems
  - Gulf War confirmed their fears
- US analysts agreed, but concluded it was more than just technology
  - Convergence of technology, operational concepts, and organization
  - A "revolution in military affairs" later described as "transformation"
- Analysts also recognized the important roles that space and cyber capabilities played in 1991, and would play in the future

Transformation Has Melded the Operational and Strategic Streams of American Airpower Thought

- **Space and cyber systems support airpower to create an integrated operational domain**
  - **National assets in support of tactical ops**
  - **GPS for navigation, targeting, and timing**
  - **All lashed together on a global communications network**
- **Transformational concepts such as network-centric warfare blur the lines between operational and strategic**
  - **Strikes on strategic targets create operational effects and vice versa**
  - **Aircraft are re-tasked from operational to strategic targets and vice versa en route, as needs and opportunities present themselves**



War with Transnational Terrorists Presented New Challenges, but Transformational Airpower Adjusted

- Transformational airpower theories to that point focused on conventional warfare
- Amorphous sub-state actors do not present easy targets
  - Difficult to find and strike
  - Questionable effects at operational and strategic levels
- The "Afghan Model" brought US airpower in support of indigenous forces
- Space, cyber, and armed drones brought persistence and lethality to a long-term war of attrition against terrorist leaders

American Airpower Faces Serious Challenges as Transformation Continues to Advance

- The immense costs of 5th generation aircraft and other sophisticated systems
- Continuing to integrate with allied air forces that may not be able to keep up
- Growing vulnerabilities of the space and cyber systems on which network operations depend
- Defeating anti-access, area-denial threats, such as precision-guided, conventional missiles