

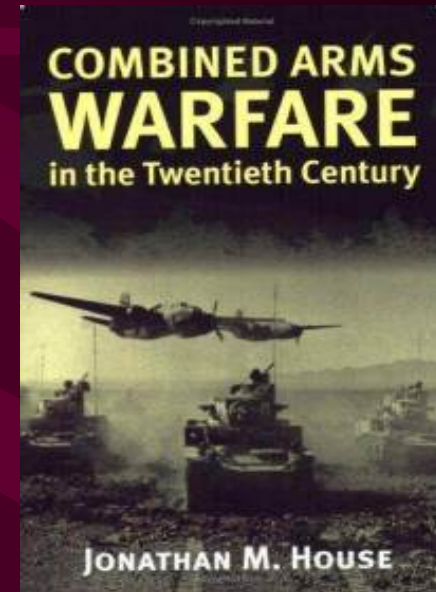


The Emergence of Modern Combined Arms Warfare

**Professor Michael Evans
Hassett Chair of Military Studies**

Three Themes

- Defining combined arms
- Combined arms from gunpowder to machine gun and in World War 1
- Legacy and lessons of combined arms warfare for today and tomorrow

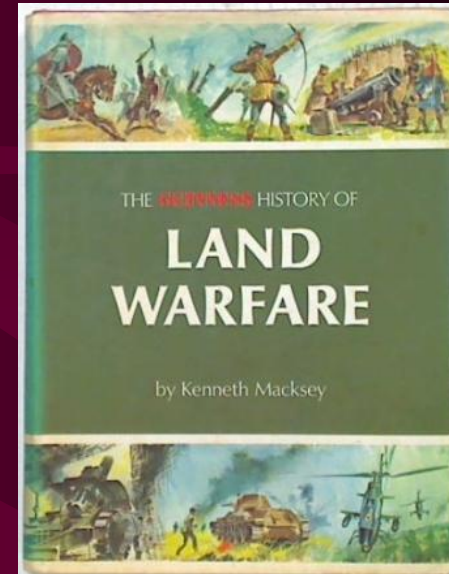


Defining Combined Arms



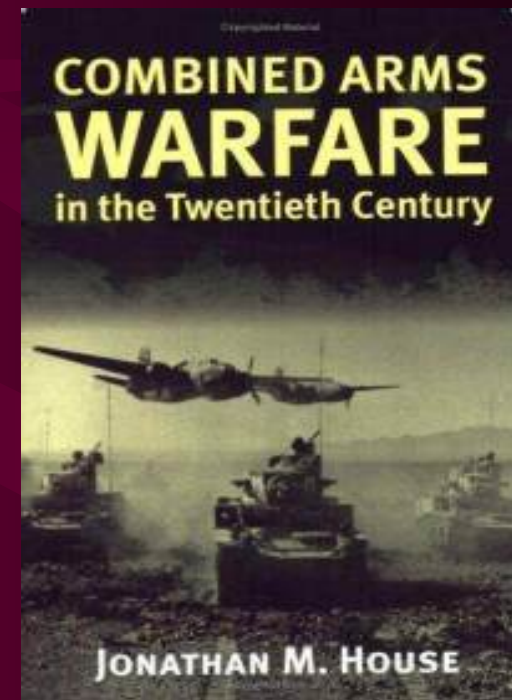
The Concept of Combined Arms

- The idea of combining weapons systems in battle is age-old (chariots, archers and spearmen) in the armies of the ancient world
- But before gunpowder, armies lacked mobile artillery to facilitate fire and movement
- Pre-industrial combined arms warfare involved formation warfare of infantry, artillery and cavalry



Definition of Combined Arms Warfare

- *Military operations undertaken by a fighting organisation composed of either two or three of the principal combat arms of infantry, artillery, and cavalry/armour*
- Since 20th century engineers, air defense artillery, fighter-bombers added
- *In a combined arms concept of warfare, the whole is greater than the parts*
- Fires and maneuver blended to create dilemma for the enemy



From Musket to Machine Gun:

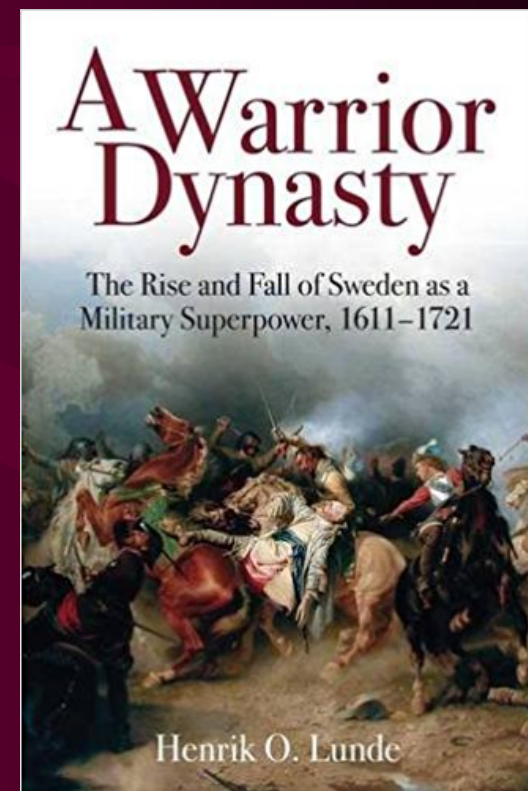
Combined Arms in Combat

History



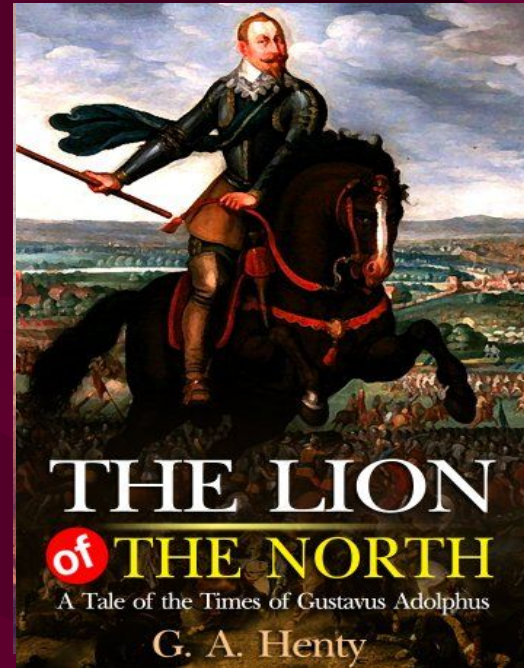
The Thirty Years War: The Swedes and Origins of Combined Arms

- By 17th century, improved firearms technology and military organisation saw first combined arms emerge in Swedish Army of Gustavus Adolphus
- *Infantry brigades of musketeers-pikemen*
- *Mobile field artillery*
- *Heavy shock cavalry*
- Gustavus combined fire, manoeuvre, and shock into a single warfighting system



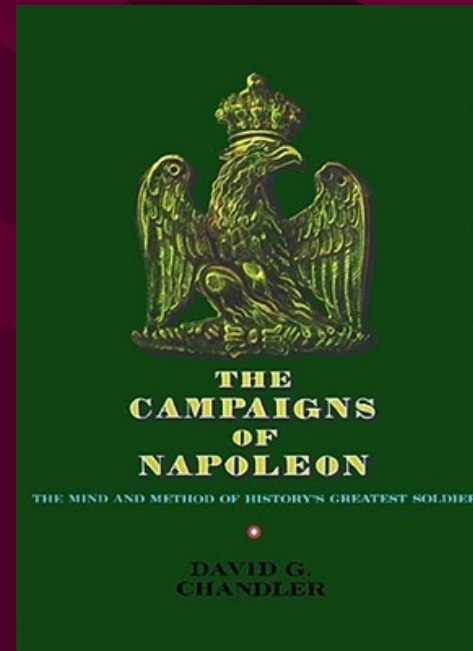
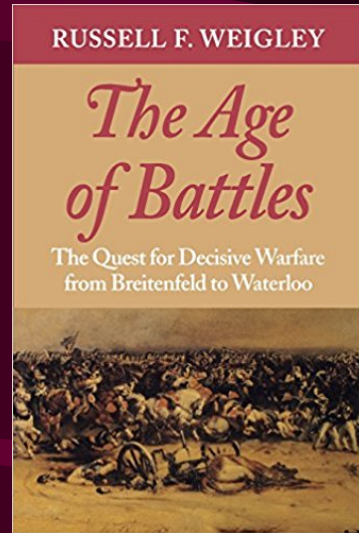
Triumph at Breitenfeld, 1631

- At Breitenfeld in Germany, Gustavus confronted Catholic League Army of Count Tilly
- Catholic Army composed of traditional heavy infantry squares, or *tercios* (invented by Spanish in 16th century)
- Swedes combined musketeers and pikemen, cavalry and field guns to smash *tercios* and decisively defeat Catholic forces



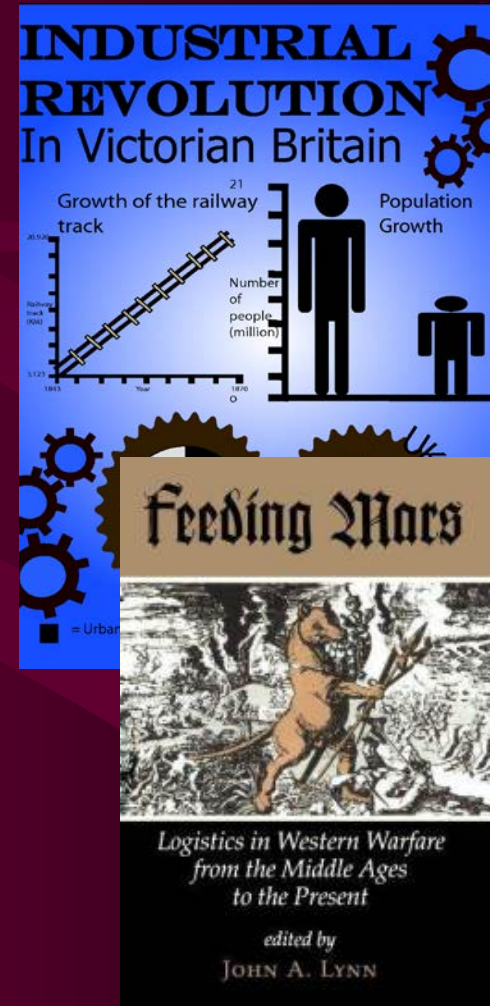
The 'Breitenfeld System': The Age of Battles

- Breitenfeld showed how infantry, artillery and cavalry could be blended in battle
- Swedish innovations became blueprint for European soldiers from Turenne through Marlborough to Frederick the Great
- In Napoleonic Wars, triad of infantry, cavalry and artillery refined into self-contained *corps d'armée* system
- *Corps d'armée* system was 'the French secret weapon of the Napoleonic Wars' – **David Chandler, *The Campaigns of Napoleon* (1966)**



The Industrial Revolution and Land Warfare

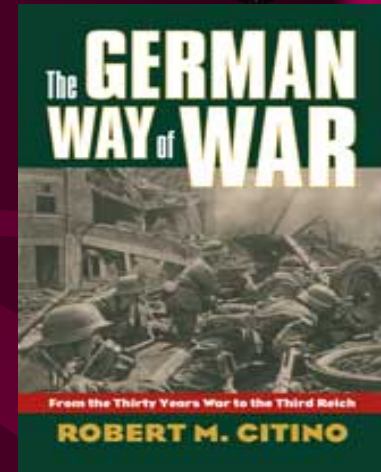
- Revolutionised land movement through steam-power – railways
- Expanded scale of the battlefield by mass rail mobilisation
- Permitted greater command integration over distance (electric telegraph)
- Revolutionised firepower (rifled weapons and machine guns)
- Began obsolescence of the *arme blanche* (cavalry) as decisive arm



The Distributed Battlefield and Prussian *Operativ*

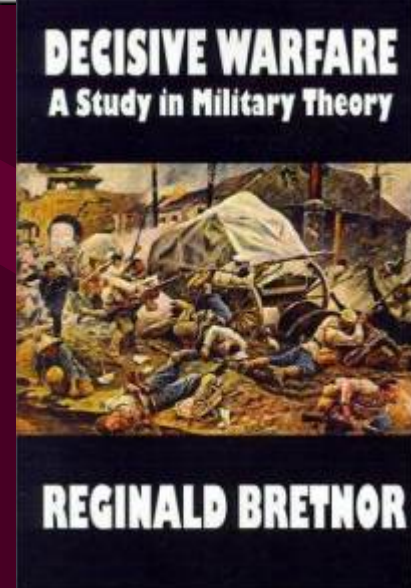
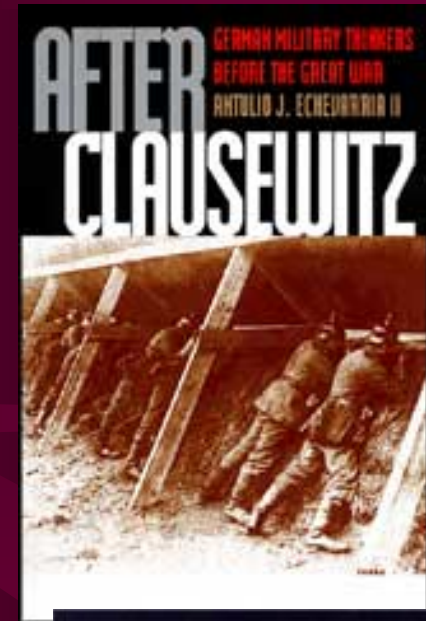


- Despite railway, telegraph and firepower military theory remained pre-industrial
- Prussian Army developed *operativ* (staff operation): industrial methods tied to ‘Breitenfeld system’ and *vernichtungsschlacht* (annihilation)
- Victories over less industrialised Austrians and French 1866-70
- European armies imitated the Prusso-German approach to industrial warfare



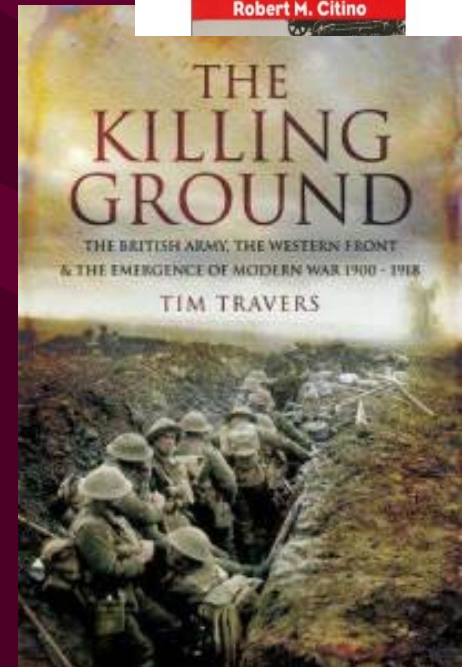
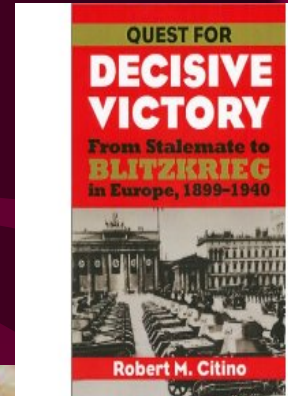
Divergence and Stalemate: **Strategic Mobility versus Tactical Immobility**

- **1870-1914: crisis in European military theory**
- Strategic mobility through railways not matched by tactical mobility in field (foot and horse)
- Volume of direct fire eclipsed capacity for movement (heavy cavalry obsolete on direct-fire battlefield)
- *Foreshadowed attrition and stalemate not annihilation and rapid decision*



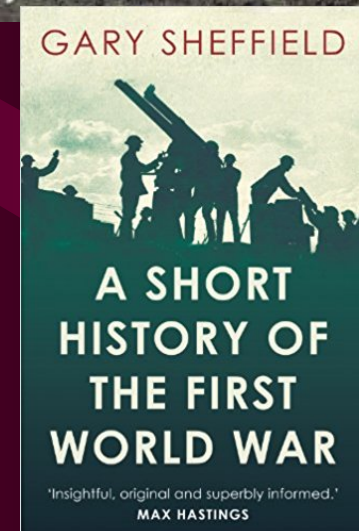
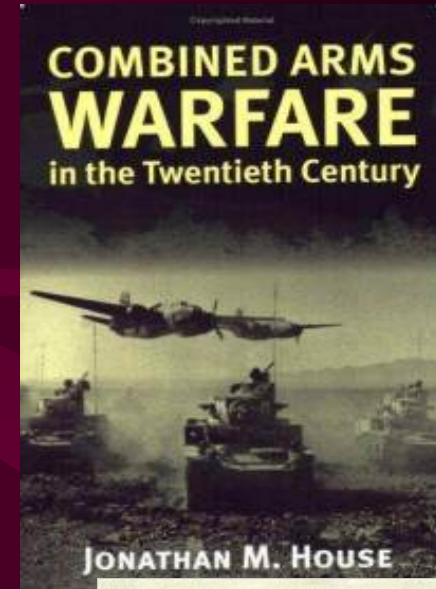
Killing Ground: World War 1 Crisis

- In World War I defensive firepower shattered ‘Breitenfeld triad’ refined over three centuries and created trench deadlock
- Offensives from Verdun to Somme failed: lack of technical incapacity of indirect artillery fire to suppress defences in depth
- Penetration and break-in of enemy lines by unprotected infantry in a *bataille de rupture* faltered



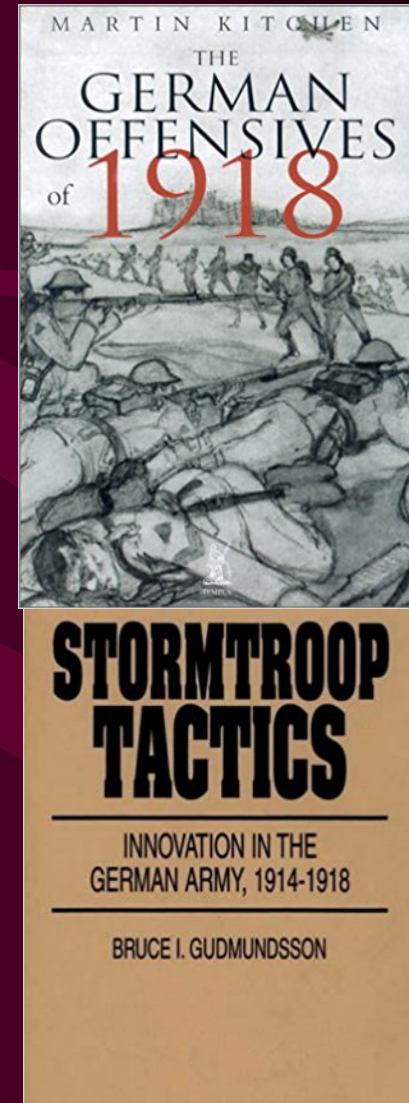
World War 1: 'The Birth of the Modern Style of Warfare'

- Emergence of industrial-age combined arms warfare in 1917-18
- Invention of *predicted indirect artillery* fire (sound ranging, flash spotting, aerial photography) and *protected mobility* (tanks and armour)
- Invention of radio and close air support
- Armies able to employ infantry, artillery fire, infantry support weapons and protected mobility (tanks)
- Modern combined arms warfare fused mobility with protection for fire and manoeuvre



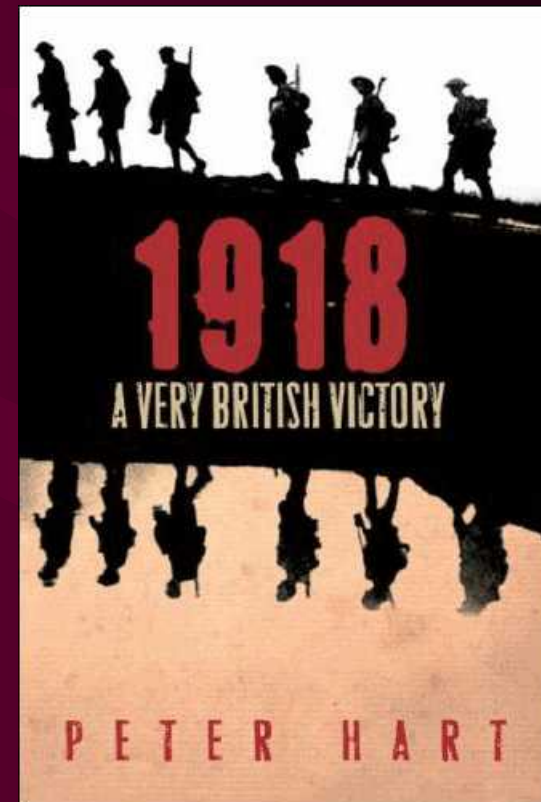
Operation Michael 1918: The Germans and Combined Arms

- Germans created all-arms tactical system of artillery fire coordinated with storm troops to break trench deadlock
- Operation *Michael* saw Germans launch a huge artillery-infantry offensive that initially shattered Allies
- *But Germans assault and infiltration lacked protected mobility for exploitation*
- Lack of tactical-technical mix of movement, protection and fire meant German offensive failed



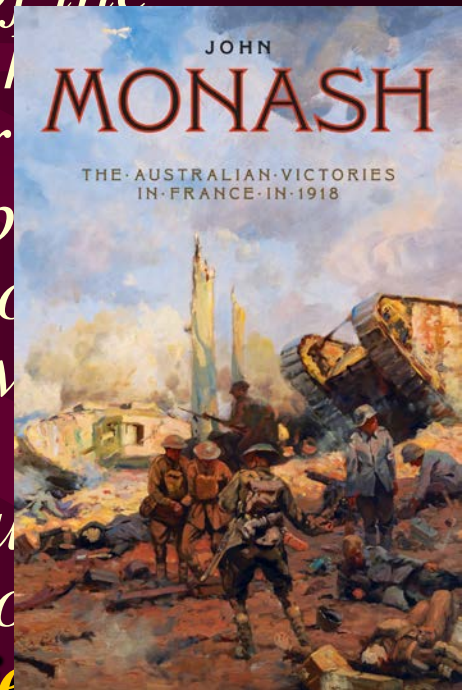
1918: The British and Combined Arms Warfare

- British Expeditionary Force (BEF) sought tactical and technical means to break trench deadlock
- Emphasised an all-arms, air-ground model of warfare (armour, aircraft and infantry) operating under ‘long black arms’ of the artillery
- Armoured vehicles used as direct-fire vehicles to protect infantry assaults with infantry support weapons (Lewis guns, rifle grenades, trench mortars)



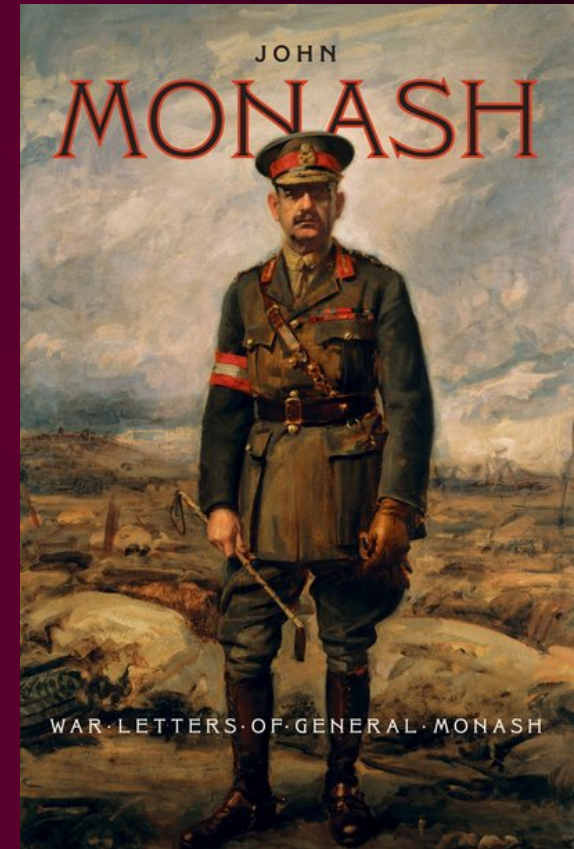
Monash: Pioneer of Modern Combined Arms Warfare

- I formed the theory that the true role of the infantry was not to expend itself upon physical effort, nor to wither away under merciless machine-gun fire, nor to impale itself on hostile bayonets, nor to tear itself to pieces in hostile entanglements . . . But to advance under the maximum possible array of mechanical resources in the form of gas, machine-guns, tanks, mortars and aircraft*
– **John Monash, *The Australian Victories in France* (1923)**



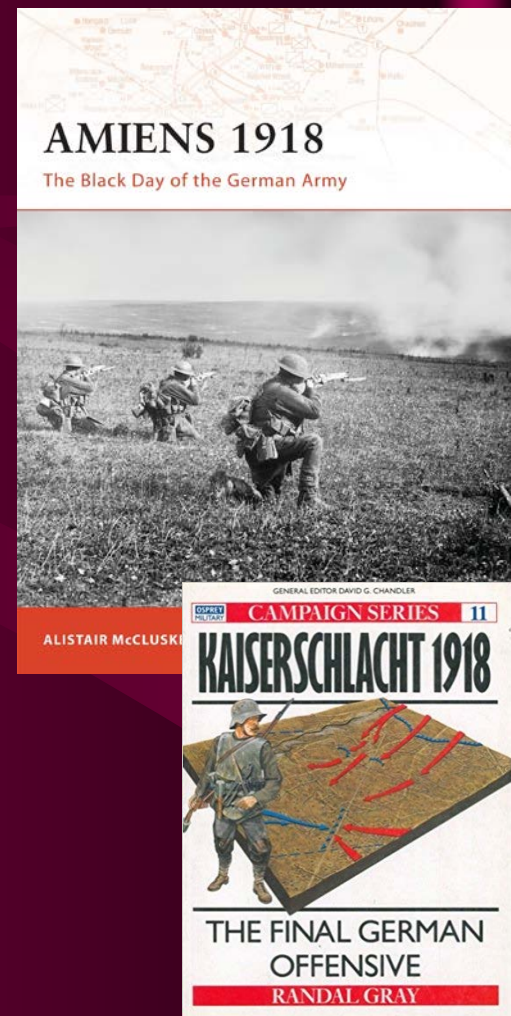
Monash: The Orchestral Metaphor

- *A modern battle plan is like nothing so much as a score for an orchestral composition, where the various arms and units are the instruments, and the tasks they perform are their respective musical phrases. Each individual unit must make its entry precisely at the proper moment, and play its phrase in the general harmony – **Monash, The Australian Victories in France (1923)***



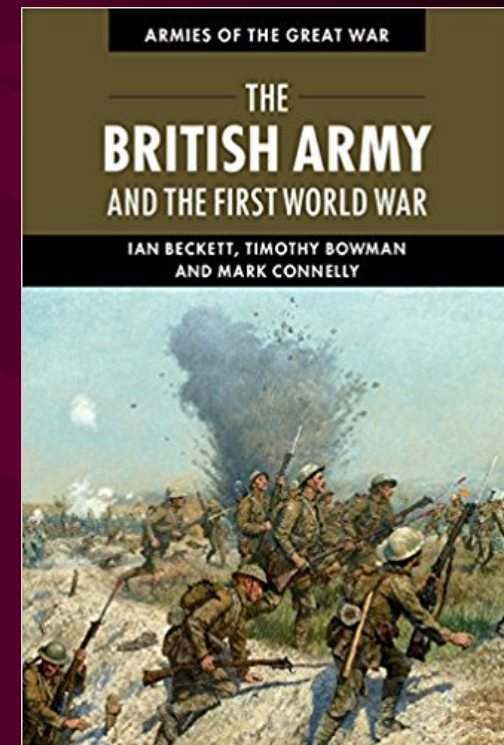
Testing Ground: Hamel and Amiens

- **Hamel, July 1918:** model all-arms battle saw Monash use tanks, artillery and infantry with great skill
- **Amiens, August 1918:** led to '*the black day of the German Army*'
- Germans lost 27,000 men and 450 field guns
- *Amiens marked the beginning of the Hundred Days campaign that led to Allied victory in November 1918*



The Hundred Days Campaign, August-November 1918

- British Empire Armies employed combined arms ‘mechanical war’ (tanks, artillery and well-equipped infantry)
- Inflicted strategic defeat on the German Army through succession of breakthrough battles on Western Front
- *‘[Hundred Days] a milestone in the history of land warfare for it marked the first successful use of high performance teams using high performance machines in the attack’ –*
Shelford Bidwell and Dominick Graham, *Fire-Power: British Army Weapons and Theories of War, 1904-45* (1982)

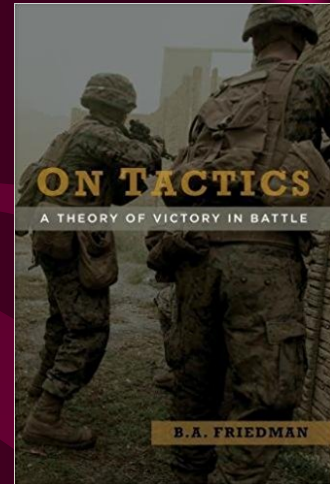


Legacy and Lessons of Combined Arms Warfare



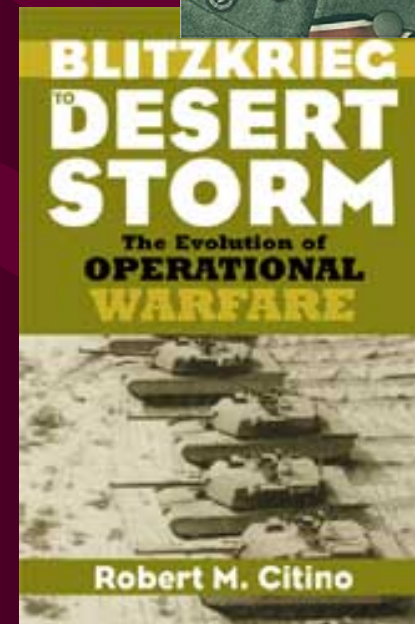
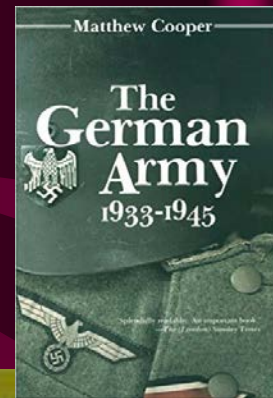
The 'Breitenfeld System' Recovered

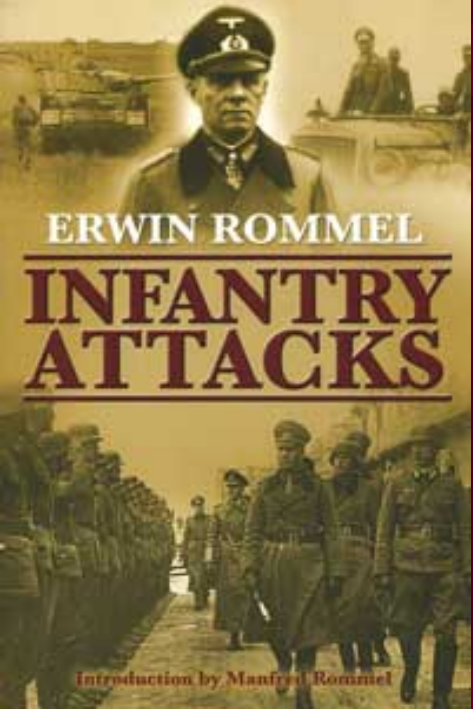
- Impact of Hundred Days campaign in 1918 similar to Swedish Army's 1631 Breitenfeld campaign
- Like Swedes for gunpowder age, BEF provided model of all-arms warfare for industrial age
- Allied blueprint for victory in World War I, *Plan 1919* anticipated mechanised combined arms campaigns of 1939-41
- *'In modified form, this tactical theory [Plan 1919] was put to the test in 1939, and became known as Blitzkrieg' – J. F. C. Fuller, The Conduct of War, 1789-1961 (1961)*



Combined Arms Warfare, 1918-45

- Inter-war period the combined arms warfare of 1917-18 refined in Soviet Union and Germany (armoured vehicles, mechanised infantry, artillery and close air support)
- *Blitzkrieg* 1939-941 was temporary lead in mechanisation scoring a series of victories over less well-prepared opponents
- At Kursk in 1943, the Soviet Army blunted the German *Blitzkrieg* by employing a combined arms defence





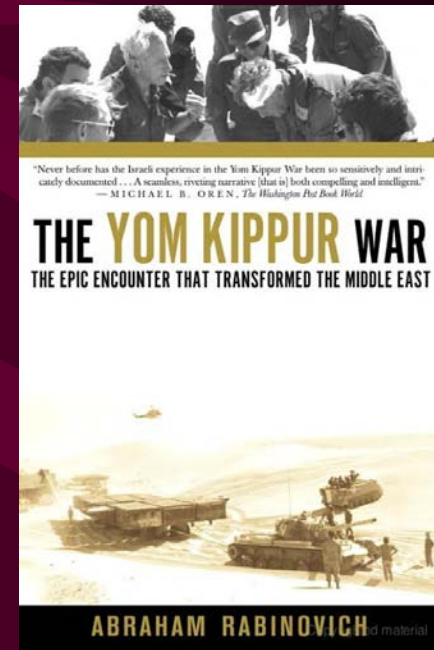
*Rommel you magnificent
bastard, I read your book!*
**General George S. Patton from
the film *Patton* (1970)**

PATTON



Perils of Neglecting Combined Arms: **Korea, Yom Kippur, Chechnya**

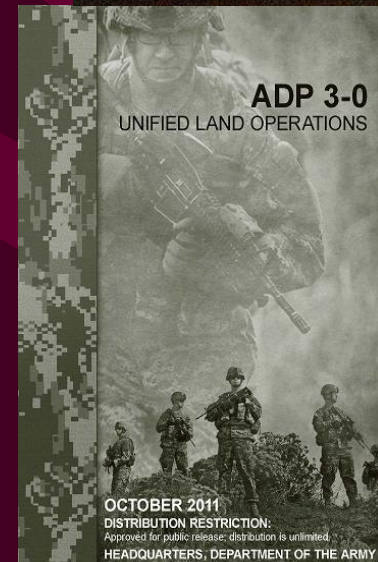
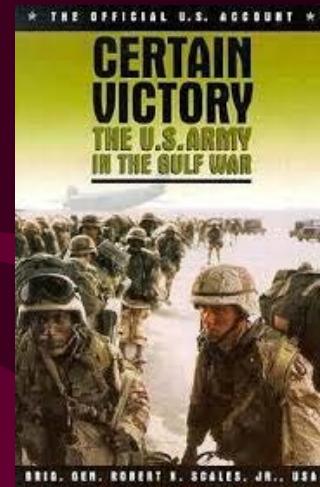
- **Korea 1950:** US Army's 'Task Force Smith' a light infantry force overrun by North Korean forces spearheaded by T-34 tanks
- **Yom Kippur 1973:** early IDF all-tank attacks destroyed by Egyptian precision-guided munitions
- **Chechnya 1994-96:** Russian tanks employed in the city of Grozny without infantry screens destroyed by Chechen rebels using RPGs and missiles



From Afghanistan to *Unified Land Operations*

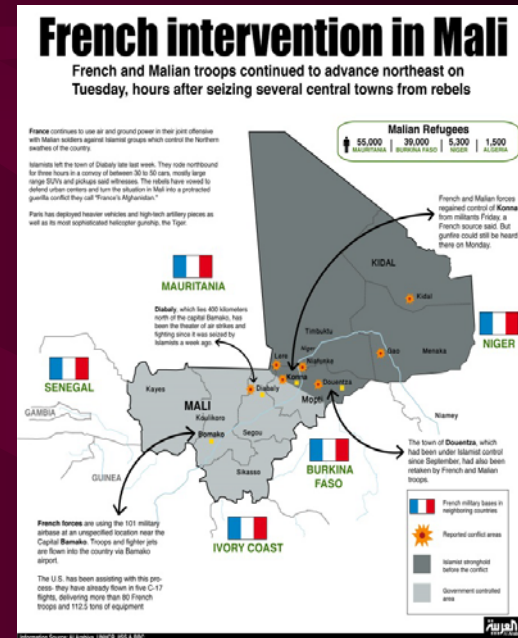
Operations (ADP 3-0, 2011)

- *The key to success [in ground warfare], whether in 1916 or 2002, is to team heavy, well-directed fires with skilled ground maneuver to exploit their effects and overwhelm the surviving enemy’ – Stephen Biddle, **Afghanistan and the Future of War (2002)***
- *Combined arms manoeuvre and wide-area security are core competencies and cognitive tools of warfighting – **Colonel Bill Benson, ‘Unified Land Operations’, Military Review, (March-April 2012)***



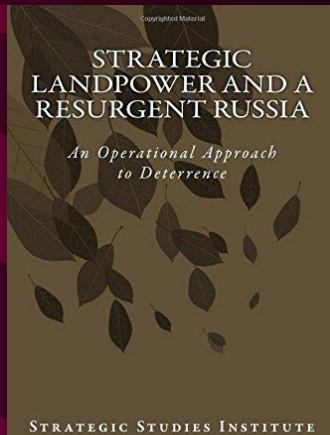
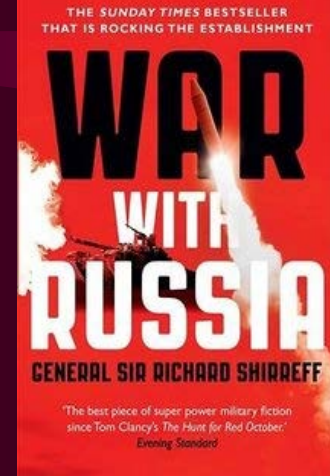
Operation *SERVAL*, 2013: French Campaign in Mali

- French prevented the fall of Mali to Islamist (ISIL-Tuareg) forces
- Campaign using airborne forces, mechanised battalions plus air power
- *‘For the land component, all the operations were characterised by the dynamic of joint and combined arms operations. Reach, firepower, mobility, and armor vehicle deterrence appeared as the key factors to success’ – French Army, Lessons Learned from Operation *SERVAL*: Mali Intervention (2015)*



Russia's War in the Ukraine

- *Russians and separatist forces used advanced combined arms warfare in a way Western forces have not seen since 1945*
- **Artillery:** included systems with conventional, thermobaric and cluster warheads
- **Armour:** T-72B3, T-80 and T-90 tanks with 125mm guns/missiles; with ERA
- **UAS:** allowed mass indirect fires to destroy Ukrainian battalions
- **IFVs:** unable to survive without reactive armour – **Ben Barry, *Harsh Lessons: Iraq, Afghanistan and the Changing Character of War* (2017)**



Enduring Relevance of Combined Arms

The only technical development in the foreseeable future that would cause a truly revolutionary change in warfare . . . would be one that could make terrain, dispersion and combined arms irrelevant. If deep strike systems really could destroy any target anywhere . . . this would overturn skilled armies ability to limit their vulnerability to hostile firepower and bring about a truly new situation –

Stephen Biddle, *Military Power: Explaining Victory and Defeat in Modern Battle* (2004)

MILITARY POWER

Explaining Victory
and Defeat in
Modern Battle

STEPHEN BIDDLE

Conclusion



Conceptual Recap

- From Breitenfeld in 1631 through Amiens in 1918 to Mali-Ukraine today, combined arms key to combat success
- *But correctly assessing interaction of technology and doctrine is important in coordinating fires, manoeuvre and protection*
- Despite UAS and looming robotics revolution, combined arms unlikely to disappear
- *‘When the [infantry] companies disappear into the smoke, who shall save them? – themselves they cannot save’.*

Questions

