



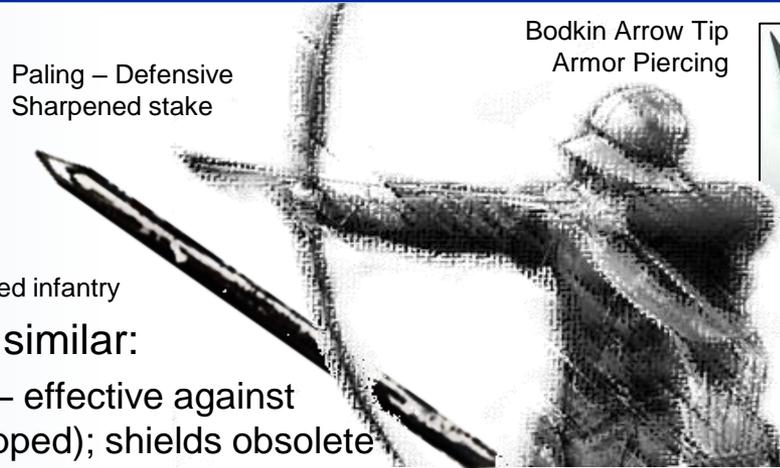
## On The Effectiveness Of The Welsh-English Longbow At Agincourt - Questioning Conventional Wisdom

*“Tut! I have the best armor of the world. Would it were day!”*

Charles d'Albret, Constable of France, expresses confidence in the survivability qualities of his armor and his readiness to engage the enemy.  
On the eve of St Crispian's Day, 1415, in the French camp, near Agincourt  
**Shakespeare, Henry V, Act 3. Scene VII**

# On The Order Of Battle At Agincourt

- English forces ~ 8,500
  - 1,500 men-at-arms (20%)
  - 7,000 archer-armed infantry
- French forces ~ 25,000
  - 8,600 men-at-arms
  - 1,400 mounted knights
  - 12,000+ archer/crossbow-armed infantry
- French and English armor - similar:
  - Men-at-Arms, plate armor – effective against arrows (including *bodkin* tipped); shields obsolete
  - Archer-infantry – mail, quilt and metal patches; vulnerable to arrows
  - Mounted knights – horses vulnerable to arrows and impalement on palings
  - Weapons and equipment similar – French equestrian and English bow-shot range advantages
- Ground:
  - Level, funneling defile bounded by forests –1200 narrowing to 750 yards, French to English positions
  - Heavy rain overnight on clay plough-land – turns to quagmire (hooves and infantry feet)
- Fitness to fight:
  - English:
    - Strength: Professional army; well led by warrior Henry V; mobile; disciplined; “one company”; strong defensive fighting capability
    - Weakness: Cut off behind enemy lines; tired/hungry/wet(260 miles in 17 days); depleted by dysentery; fewer, French/English >3:1
  - French:
    - Strength: Fresher and better equipped; high morale (ready to revenge as Crécy and Poitiers); strategically and tactically advantaged
    - Weakness: Over confident and over eager to engage; dissipated leadership (Charles VI, madness); French archers/crossbowmen deployed to the rear and not effective



Bodkin Arrow Tip  
Armor Piercing



Limited  
Horse Armor



Plate  
Armor



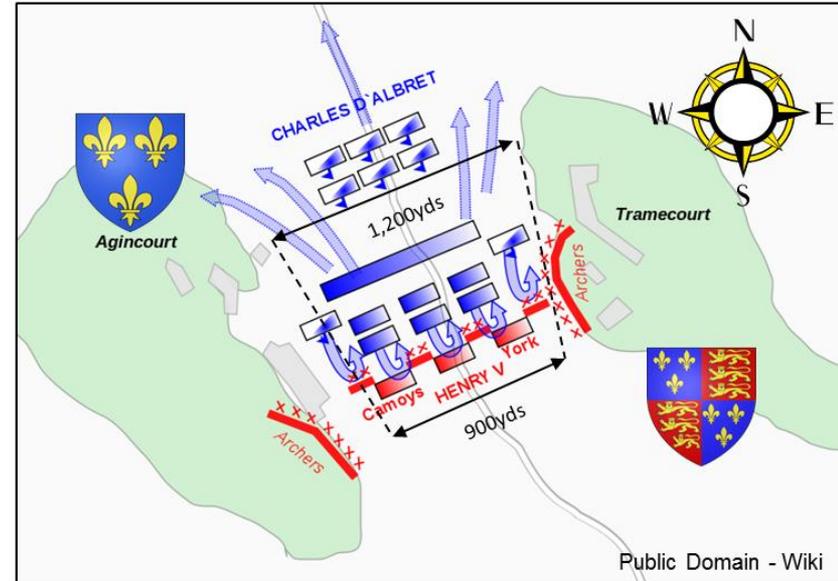
Infantry  
Quilt

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Courtesy: Steel & Stone

# On The Deployment Of Forces At The Battle At Agincourt

- French forces have blocked the road to Calais and brought the English forces to bay
- Provoking the French, arraigned in battle order, the English close to ~300 yds (within bow-shot range):
  - Longbowmen on either flank and a further ~200 at the very center
  - English mounted knights dismount to fight on foot
  - Men-at-arms and knights in the center deployed initially over a 750 yds front
- French mounted knights on flanks are deployed to attack the English flanks
- French archers/crossbowmen are in second rank and are unable to mount effective return fire
- French deployed over a 1,200 yds front – their exposure to English arrow fire causes slow attrition and precipitates a reflex advance
- French advance into the forest-bounded defile causes, their ranks to compress from 1,200 to 900 yds



The Poor Choice Of Ground Nullifies French > 3:1 Advantage In Numbers Over The English

# On The Battle At Agincourt

- Battle initiated with Henry V provoking the Dauphin – moving the English army to within 300 yards of the French in a defile between the two forests that was around 750 yards wide:
  - Archers mainly on either flank – 200 in center
  - Archers drive in palings (sharp stakes)
  - 1,500 English Men at Arms in center
- Mounted French charge English flanks:
  - English arrows bring down horses – cause panic
  - French unable to penetrate paling barrier
  - Mounted attack turned back - hooves further cut-up ground
- ~8,600 French men at arms attack:
  - Plate armor effective protection from arrows
  - Debilitated by mud under foot
  - French funneled from 1,200 to 900 yards
  - Initially, French press back English center but close packing restricts room for maneuver-fighting, fatigue and entry of more lightly armored but agile English archers, having dispensed with their bows (armed now with knives and axes) and, employing double or triple teaming, quickly results in the destruction of the French army
- French defeat quickly follows



"Morning of the Battle of Agincourt, 25th October 1415", by Sir John Gilbert



Agincourt - The Battlefield



The Ground – Maisoncelle  
Plough-land

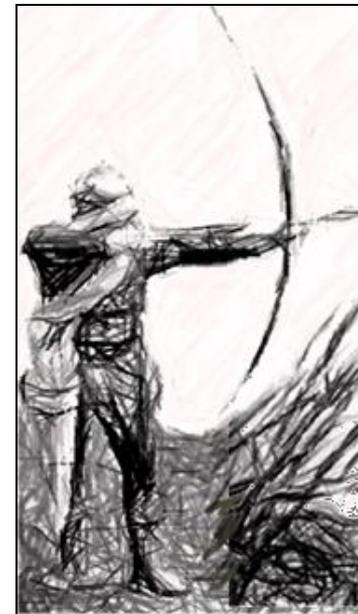


Maisoncelle Heavy Clay  
Soils – Likely Churned To  
An Almost Muddy Impasse

# The Longbow At Agincourt

## Weapon Effectiveness/Influence On The Battle

- Henry had approximately 7,000 archer-infantry at Agincourt:
  - Stock of about 400,000 arrows
  - Each archer could shoot about ten arrows a minute, so the army only had enough ammunition for about 6 minutes of shooting at maximum fire power
  - Against unarmored infantry and horses, this fire power would have been devastating - Seventy thousand arrows a minute or over 1,100 a second (at Agincourt, 800 mounted French knights were reported reduced to 140 before they could close with the English the archers)
- Early 15<sup>th</sup> Century armor varied between 1 and 4mm thick - bodkin arrows could penetrate 1 mm of armor but vital areas of the body would not have sustained mortal wounds (*see backup chart*)
  - Armor very effective by 1400 - men-at-arms had dispensed with shields
- Probably the effect of a massive hail of fast-moving heavy arrows at Agincourt, would have:
  - Broken mounted efforts by killing or wounding the horses
  - Outclassed French bowmen
  - Caused a stooped, head-down advance by the French men-at-arms (avoid visor-slit penetration)
  - To French men-at-arms, the arrows probably caused a number of partially disabling injuries - if one arrow in a 250 had been effective, arrow fire would have severely hindered a unified French infantry advance but fell short of delivering the lethality of a *coup de grace*, to the advance



Lethality – Massed Arrow-fire Devastated Mounted Forces By Killing Or Disabling Horses; Against Heavily Armored Dismounted Men-at-arms, Less Effective; Contributed To The Disruption Of Fighting Cohesion With Limited Effect In Causing Disabling Wounds ( Via “Chinks” In The Armor)

# Issues Influencing The Outcome Of Agincourt (1)

#	Aspect	Issues	Influence On Outcome
1	Plate Armor – Protective Effectiveness - <b>Survivability</b>	<ul style="list-style-type: none"> <li>•By 1400, it was effective protection against lethal penetration by longbow arrows (thickness &gt; 1mm) – Men-at-arms had dispensed with shields in dismounted hand-to-hand combat</li> <li>•Risk of wounding by an arrow through a “chink” in the armor e.g. Visor eye slit vulnerability – necessitates awkward, stooped, head-down fatiguing walk</li> </ul>	Significant Influence
2	Weight of Kit	<ul style="list-style-type: none"> <li>•Plate armor alone for men-at-arms weighs between 50-60 lbs</li> <li>•Carriage of kit over 300 yds of broken muddy plough ground would have led to exhaustion and dramatically reduced fighting effectiveness</li> <li>•French knights knocked down were unable to arise battle-ready</li> </ul>	Significant Influence
3	Weather – <b>(Adverse)</b>	<ul style="list-style-type: none"> <li>•Heavy rain leading up to Oct 24 rendered the confined plough ground unsuitable for mounted operations and the churning foot-fall of heavily armored men-at-arms</li> </ul>	Significant Influence
4	Narrowness of defile at the English line – <b>Maneuver and TTP</b>	<ul style="list-style-type: none"> <li>•Funneling of French men-at-arms impeded maneuver – use of weapons is impeded by crush</li> <li>•Congestion became critical as the melee developed and French rear ranks pressed forward against front</li> <li>•Muddy underfoot (heavy rain, clay and horse traffic) compromised footing and agility French men-at-arms wearing plate armor</li> <li>• Lightly armored (agile) English bowmen, laying down bows and coming from behind paling defenses and wickets, were able to work “teaming tactics” were able to maneuver to dispatch peripheral or separated French men-at-arms</li> </ul>	Decisive
5	Mounted Knights	<ul style="list-style-type: none"> <li>•Principle deployment to attack an neutralize English archers on either flank</li> <li>•Mounted effectiveness limited by confined maneuver space and by inability to penetrate palings and wicket barriers – unlike the more open encounter at Hastings in 1066 where mounted Normans wore down and created fissures in the ranks of Saxons</li> <li>•Attrition due to incapacitation of horses (not armored) by arrow fire broke the French charge, neutralizing the effort to dislodge lightly armored English forces on the flanks</li> </ul>	Decisive (By its failure to destroy English Light Infantry)

# Issues Influencing The Outcome Of Agincourt (2)

#	Aspect	Issues	Influence On Outcome
6	Commitment of forces - <b>Maneuver</b>	<ul style="list-style-type: none"> <li>•After early provocative advance, English forces fight a defensive action – all forces engaged in the fight</li> <li>•French archers/crossbowman, deployed to rear are unable to enter the fight</li> <li>•Mounted French charge cuts up the ground in the approach to the English line - subsequently, becomes almost impassable to effective field maneuver</li> <li>•Failure to properly marshal or meter the advance of rear French ranks compresses and leads to congestion in movement at the point of engagement with the enemy and undermines French fighting lethality</li> </ul>	Significant Influence
7	<b>Leadership</b>	<ul style="list-style-type: none"> <li>•French leadership shared and disparate without effective chain of command</li> <li>•French leadership failed to understand the ground or to pay attention to more than rudimentary intelligence</li> <li>•English, after 3-months deployment in the field were a “band of brothers” – structured command system, motivated, focused and led by arguably the greatest English warrior king</li> </ul>	Decisive
8	English Longbows/ archers - <b>Lethality</b>	<ul style="list-style-type: none"> <li>•Lethal against all but plate armor – devastating effectiveness against massed French mounted armor by killing or incapacitating or maddening horses</li> <li>•Rate of longbow fire and concentrated fall of arrows searches out vulnerable chinks in plate armor and slows, concentrates and congests men-at-arms’ advance, disrupting and dissipating shock of superior French numbers as front center lines clash</li> <li>•Arrow fire used as both an area suppression weapon and also precision fire for such as “teaming” tactics</li> </ul>	Decisive
9	English longbowmen as light infantry – <b>Agility/ Lethality</b>	<ul style="list-style-type: none"> <li>•Multi-role English archers morph into light infantry – agile and emerge from flank protected defensive positions with French and English men-at-arms locked together in the battlefield central crush and envelop French flanks (akin to Hannibal’s forces at Cannae or the Zulu Impi at Isandlwana), moving more sure-footedly, unencumbered by heavy armor over the muddy ground, employing “teaming” tactics to dispatch large numbers of less mobile, situationally compromised and tired French men-at-arms</li> </ul>	Decisive

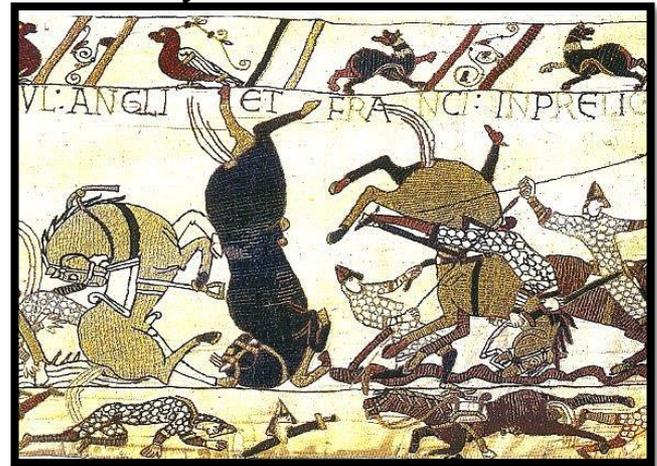
# Summary

- The principle reasons for the French defeat were a combination of the following:
  - **Leadership** - importantly King Henry was a professional, a leader who knew his men, knew warfare, and knew himself and led by example; French leadership was divided and weak
  - **Maneuver - poor French battle-plan** allowing English to dictate a defensive encounter and to nullify numeric advantage by their choice of ground; poor French situational awareness – vitally, English deployment in the Agincourt-Tramcourt defile proved to be the decisive factor
  - **Agility and lethality** - lightly armored English infantry were able to envelop French flanks (classic Cannae) and employ “teaming” tactics – their impact on the outcome of the battle was decisive
  - **Longbow rate of fire** – as an effective area weapon destroying French mounted threat and, disruption and critical debilitation of the French heavy armor, men-at-arms
  - **Plate armor (survivability)** – was decisive in English use but for the French, maneuver, situational awareness and combat stamina were fatally compromised by the impact of weather, underfoot conditions and forced congestion caused by funneling into the Agincourt-Tramcourt defile
  - **Excellent self defense capability (survivability)** of English archers against mounted armor through the employment of wooden palings – failure of the French mounted armor to break the English flanks was a decisive factor
  - **Unsuitable ground for heavy armor movement** – French advance required passage across muddy ground such that by the time of contact with the enemy line, combat effectiveness was so undermined by exhaustion, as to render fighting capability critically degraded

No One Factor Was Responsible For The Result At At Agincourt – The *Game-Changing* Welsh-English Longbow Is A Military Myth, Built On Legend And Invented To Explain An Occurrence That Otherwise Appeared To Defy Good Sense i.e. ***How The Few Beat So Many!***

# Conclusions

- The *moral of Agincourt* – that a small, well-trained, well deployed and well-led force can defeat a far larger army – we characterize it today, as asymmetric warfare
- The capability and performance of individual weapons (e.g. the Longbow; horse; caltrops etc) is important, however, weapons effectiveness is most strongly influenced by the nature of their employment; their impact as part of an integrated system and the influence of the environment in which they are used
- The descriptive accoutrements of combat such as agility, maneuver, survivability, et cetera are the same today as they were in the early 15<sup>th</sup> century - a systems approach (underpinned by sound domain knowledge, judgment and imaginative/innovative employment of resources) is key to success
- .....and of Henry V, great leadership counts



Massed Horses Have Always Been Vulnerable To Artillery - Hastings 1066 (Bayeux Tapestry)

Conventional Wisdom Gives The Longbow Too Much Credit At The Battle At Agincourt – The English Won Because, As A Total Integrated Weapons System, They Were Better Adapted To The Ground, Maneuver And To The Delivery Of Lethal Prejudice At Critical Points During The Battle

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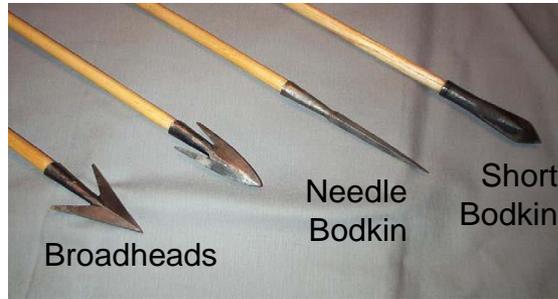
## Backups

*‘Tut. J'ai la meilleure armure du monde. Ne serait-il faisait jour ’*

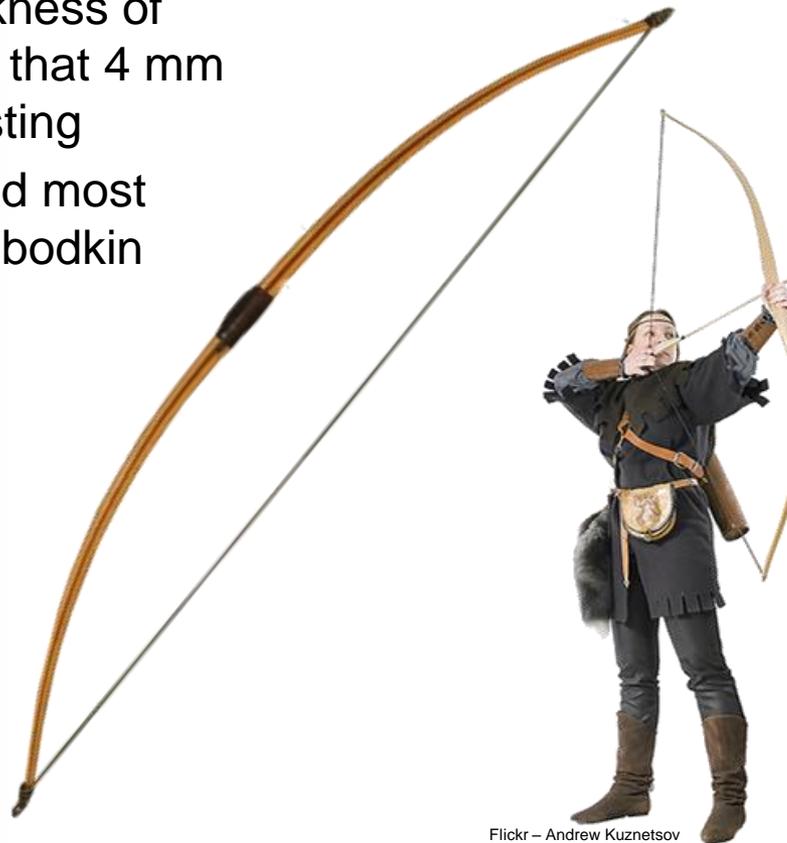
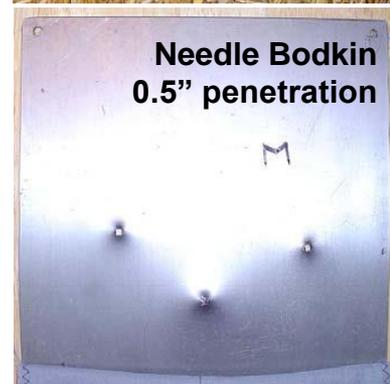
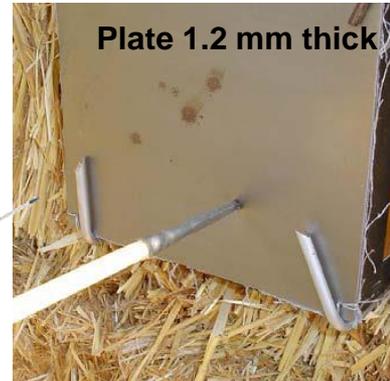
# The Longbow and Arrow

## Armor Piercing Effectiveness: A Modern Assessment

- Thesis by Matheus Bane, 2006 – “English Longbow Testing – Against Various Armor – Circa 1400”
- Based on experimentation with various arrows and up to 110 lb draw longbows
- Plate armor of minimum thickness of 1.2 mm over padding (noting that 4 mm was available) chosen for testing
- Established that plate stopped most arrows, however, the needle bodkin punched past the threshold without causing a potential killing penetration
- With additional padding or increased plate thickness the work assessed that none of the arrows would have broken skin



Courtesy: Matheus Bane, English Longbow



Flickr – Andrew Kuznetsov

# Mud – Ploughed Fields

