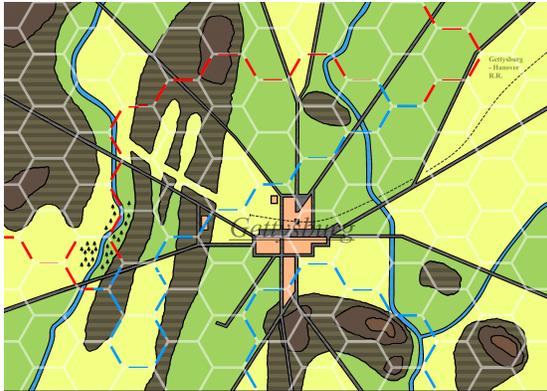


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Wargames Unplugged:

"I suppose it'll be another book review just like all the other options?"
Anonymous Student



The Battle of Gettysburg : 1400 1st Inf

Order of Battle

The United States of America vs. **The Confederate States**
 General Meade leading the Army of the Potomac vs. General Lee leading the Army of Northern Virginia

United States of America:
 XI Corps (W.G. Carl Schurz)
 I Corps (M.G. Reynolds)

The Confederate States:
 (Units represented by icons)

Terrain:
 Clear hex: Costs 1 movement point
 No effect on combat
 Wood hex: Entry prohibited
 Combat, blocking terrain.
 Hill hex: Costs two points
 Combat no effect
 River hex: Movement two points
 Town hex: Movement one point

Sequence of Play: Sides alternate play. Each player's turn consists of two phases; a movement phase and a combat phase.

Movement Phase: Player can move as many or as few units as they like, according to movement points, in any direction desired. The six surrounding hexes of a unit are its zone of control. All units that enter an enemy zone of control must stop and attack during their combat phase.

Combat Phase: The combat strength value of a unit is its basic power to attack and defend during the combat phase, and it's indivisible. All units in an enemy's zone of control must attack during the combat phase. Artillery units may make a bombardment attack against an enemy unit two hexes away. An artillery unit that is not adjacent to the unit that it's attacking is not affected by adverse combat results. All combat is resolved using the Combat Results Table. The attacker totals the combat strengths of their attacking units and compares them against the total combat strengths of the units attacked (the combat ratio). The player then rolls the die and the number is cross-indexed with the combat ratio to find the result. In case the combat ratio isn't found on the combat result table, the ratio is altered to match one on the chart that benefits the defender.

Victory conditions: The winner is the first player who gains forty Enemy Strength points.

Special Rules: The Allies must move in Southeastern direction
 The Prussians have to move around or go over the Janus-hill.
 Before moving, the Allies must roll the die. If they roll a 1, 3 or 6 the Allies may move only 50% of their troops (9 counters).

Set Up: Each counter is allocated a specific number that corresponds to the numbered hex grid. These are the designated starting positions.

Counters: Values on counters are combat strength and movement points.

Terrain: Clear hex: Costs 1 movement point
 No effect on combat
 Wood hex: Entry prohibited
 Combat, blocking terrain.
 Hill hex: Costs two points
 Combat no effect
 River hex: Movement two points
 Town hex: Movement one point

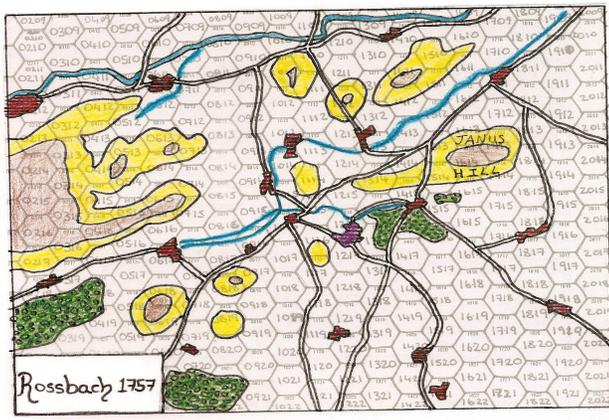
Sequence of Play: Sides alternate play. Each player's turn consists of two phases; a movement phase and a combat phase.

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Rossbach 1757

1117	1112	1216	0218	1014	1213	0214	1114	1115	1215
2-4	7-4	6-4	7-4	7-4	4-6	4-6	3-3	3-3	3-3
0912	0913	0914	0915	0916	0919	0914	0915	0917	0918
4-2	4-2	5-2	3-2	2-2	2-5	1-5	2-2	2-2	2-2
0012	0413	0414	0416	0411	0411	0317	0218	0214	0215
6-2	4-2	4-2	4-2	4-2	3-2	5-2	3-5	2-5	2-5

Ae: Attacker Eliminated Dr: Defender Retreats
 Ar: Attacker Retreats Dc: Defender Eliminated
 Ee: Equal Elimination

[6.0] Combat Results Table

Combat Ratios (Attacker to Defender Strength)

die	1-6	1-6	1-2	1-4	2-3	3-3	4-1	6-1
1	Ac	Ac	Ar	Dr	Dr	Dr	Dr	Dr
2	Ac	Ac	Ar	Ar	Dr	Dr	Dr	Dr
3	Ac	Ac	Ar	Ar	Dr	Dr	Dr	Dr
4	Ac	Ac	Ar	Ar	Dr	Dr	Dr	Dr
5	Ac	Ac	Ar	Ar	Dr	Dr	Dr	Dr
6	Ac	Ac	Ar	Ar	Dr	Dr	Dr	Dr

Attacks executed at worse than 1:1 are still treated as 1:1 to 3:3; attacks executed at a greater than 6:6 to 11:11 are treated as 16:16 to 17:17.

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The use of games in education is topical and occasionally controversial. On the one hand it seems like a ideal medium to reach to 'generation X-Box' but on the other it seems too much like fun and too little like serious learning, which leads some people to use terms like 'models' or 'simulations' as cover; or as one US army officer said "This is not *Dungeons and Dragons* we're doing here"¹. However, even poker is now becoming academically respectable as a way to teach communication skills.

A critical problem with using games in education at any level is that most educators are not gamers. Many of us have played played casual boardgames or the ubiquitous solitaire on our computers, or watched our children playing on the "moronstation", but we do not know how games "work". Since computers and games consoles became commonplace, the main focus of gaming seems to be on electronic games like *World of Warcraft*² or *Grand Theft Auto*³ and even if we could understand how to adapt games like those for pedagogically valid use, we know that they are the product of so many hours of programming that most of us will never have the resources to try, nor the skills to manage such a project.

However, if we get away from the glossy headlines of gaming, there are a ways in which gameplaying and even game design can be useful in education. There is a good deal of research ongoing on the use of gaming in education, but it deals predominantly with gaming in primary and secondary education, or in corporate training environments. The Teacher Track at this years Origins game fair included 16 seminars for teachers on topics like basic and advanced game design, adapting commercial games for classroom use and homeschooling using games⁴. There is rather less work on gaming in higher education, and the purpose of this paper is to show one use of one genre of game, and from that to offer some generalised thoughts on how ordinary non-gamer academics can think about gaming in education.

Gaming is a very wide area. While it is now associated mainly with electronic gaming, there is a huge range of board and card games. Indeed, almost every culture has some sort of board or card games – fidchell, poker, chess, go, whist, snap, parcheesi, snakes and ladders in its many variants, as well as games like bridge, monopoly, scrabble which are associated with the emergence of the leisured middled classes. It is certainly the case that playing games is one of the things which distinguishes humanity from animals but I am not yet fully convinced by the arguments that the mimetic elements of gameplay are critical in the development of intelligence – that *homo* became *sapiens* because we became *ludens*⁵. Games fall on a scale from highly predictable and deterministic, to random games of chance. Rules range from simple to complex, and many require high levels of strategic thought. Simple rules are often, but not always associated with casual games, although some games with simple rules produce complex gameplay.

1 Allen, Thomas, *Wargames*, Londn, Mandarin, 1987, p 111

2 Blizzard Entertainment, *World of Warcraft*, 2004

3 Rockstar Games, *Grand Theft Auto*, 1997

4 Origins 2008 Seminar Programme
<http://www.originsgamefair.com/uploads/yY/Vq/yYVqMUSGo75boka4UMPRQg/Seminars.pdf>
2008-08-04

5 Huizinga, Johan. *Homo Ludens*. Boston, Beacon Press, 1971; Murray, Janet H., *The Future of Electronic Games: Lessons from the first 250,000 years*, DiGRA 2005 Conference of the Digital Games Research Association, Vancouver CA.

Within the field of gaming, wargaming is a significant genre. Von Reisswitz' 1824 Kriegspiel is generally accepted as the starting point for modern wargaming, although it has recognisable antecedents going back to the 1700's. Von Reisswitz game arrived on the scene roughly contemporaneously with the need to train a larger number of officers in all European armies once conscription led to increases in army size in the nineteenth century. It also coincides roughly with the creation of the major military academies, and the development of proper modern staff work. It was a training tool well suited to at least some of the needs of the era, and its modern descendants have become a major staple of military training.

Tabletop Wargaming as a hobby divides into two camps – miniatures gaming, which has enjoyed a limited but steady popularity since the 1950s, and board and counter gaming, which, beginning from Charles Roberts' *Tactics II*⁶ in 1958, enjoyed a wave of popularity which stalled with the collapse of Jim Dunnigan's Simulations Publications in 1982. Since then a number of publishers have been surprisingly successful in serving a niche market. Between 1960 and 1991, manual historical wargames sold over 20 million units⁷. Early computer wargames were often based on porting existing hex and counter wargames to the new medium. More recent computer wargames have tended to harness the power of the medium to produce more graphically appealing products which are more game than simulation.

Early hex and counter wargames were based on simple models of movement and combat in a basic IGO-UGO turn. Movement and combat results could be derived or extrapolated from historical information, with players taking alternate turns to move their units around the battlefield much like a giant chess game where victory and defeat was determined by the genius of the Great Captains. As simulations, these games conformed with the the Great Battles and Great Captains view of military history which was the predominant orthodoxy at the time and is still a staple of some popular military history.

Around the same time as John Keegan's *The Face of Battle* challenged what he called "General staff History"⁸, wargames moved to explore the simulation of issues like morale, the fog of war, logistics, command and control and troop quality and cohesion. In the elegant simplicity of a game like *Cemetery Hill*⁹ where unit strengths reflect raw headcounts, with an occasional bonus for units like the Stonewall Brigade or the Iron Brigade. In *Three Days at Gettysburg*¹⁰, the combat strength of a unit takes account not only of its numerical strength, but also other factors which may include weapons type, ammunition supply status, unit quality, preparedness, force density, cohesion, line of sight and the presence or absence of an inspirational or incompetent leader. It could reasonably be argued that in the quest for a more realistic understanding of what happened at the face of battle, wargames designers sacrificed both playability and financial liquidity, and moved from along the scale from game towards simulation. It is hardly surprising that wargaming was always had a limited market – Dunnigan estimated that no more than 10% of the population had the capacity to understand a set of wargame rules, an estimate which was probably generous¹¹.

In the past twenty years, hex and counter wargaming has maintained a limited but dependable market share. Popular, mass market computer gaming has become almost entirely focused

6 Roberts, Charles S. *Tactics II*, Avalon Hill Game Co, Baltimore, MD, 1958

7 Dunnigan, James, *Complete Wargames Handbook*,
<http://www.hyw.com/Books/WargamesHandbook/5-1-hey.htm> 2008-08-04

8 Keegan, John, *The Face of Battle*, London, Pimlico, 1991, p 22 & 58-59

9 Hardy, Curran & Simonsen, *Cemetery Hill*, Simulations Publications Inc, 1975. *Cemetery Hill* was the game based on Gettysburg in the the Blue & Grey "Quad" Game.

10 Berg, Richard *Three Days at Gettysburg*, GMT Games, 2004. Part of the *Great Battles of the American Civil War Series*, the current rules are online at <http://www.gmtgames.com/t-GMTLivingRules.aspx#gbacw>

11 Dunnigan, James, *Complete Wargames Handbook*,
<http://www.hyw.com/Books/WargamesHandbook/5-1-hey.htm> 2008-08-04

around the First Person Shooter or Massively Multiplayer Online Role-Playing Game genres, which have a great deal of visual impact, are very playable but has very little historical value. There is an increasing convergence between commercial games and simulations used by the military for training at many levels. Games like the *America's Army*¹², commissioned and released by the US army as a 'realistic' simulation of army operations which emphasizes teamwork and is used both as a training and recruiting tool, embodies a great deal of what is interesting, and good about current computer gaming. The market for military games and simulations is now a multi-billion dollar industry.

The development of game tools like Cyberboard and Vassal¹³ have made it possible to create computer version of board and counter games which are faithful to the paper based originals but avoid the physical problems of managing piles of counters. The availability of versions of many classic wargames for Cyberboard and Vassal make it easier to use them in teaching.

From the perspective of teaching military history, the availability of wide range of examples of wargames is useful. No other field of history, nor probably of any discipline, has such a wide range of games available to it.

It allows us to get students to play the games, to look at the alternative possible choices which historical actors faced and to explore the significance of possible alternative choices. It also allow us to look at the design choices which the game designers made in seeking to produce a playable simulation, and provides examples which we can use to challenge students to design simulations of their own.

It allows exploration of the difference between the linear narratives presented in texts and the complex web of historical events from which the historian constructs those narratives. In the emerging discipline of game studies, the one of the fundamental cleavages is between those who see games as a means to explore and create narratives, and those who stress the game elements – narratology and ludology.

History is fundamentally a narrative discipline, simply because we understand our past, and therefore our present situation, as an unfolding narrative of events driven forward by purposeful (if often stupid) human choices and actions. Narrative form – telling a story – is the most basic way in which humanity passes knowledge and understanding from generation to generation. This is why history works well as a narrative discipline, and people understand history when it is presented as a story.

The fundamental dilemma of history is that we know the end of the story, and can work back to determine which elements were more or less significant in leading to that outcome. When we ask our students to write an essay on for example, the Battle of Waterloo, they know the result and will go to the literature expecting to find a discussion of the events and issues which made a significant contribution to that outcome.

This is all very well inasmuch as we do need students to learn some actual history so getting in 80 essays which demonstrate the students grasp of the main points of the debate or consensus about a historical event is a good thing. However, at university level it is not enough. At university, we are not merely trying to teach students the content of history, but also the professional skills of the historian. We are not merely trying to get them to read a range of analytical narratives of an event, but also to learn how to construct an analytical narrative out of a pile of historical facts; how to make sense of the complex web of inter-relationships between the facts of the past (or indeed a contemporary problem) and find a clear, explicatory narrative path through the evidence. Grasping the range of established debate on a topic and laying it out in a well written 1,500 word essay is still an essential skill for any humanities undergraduate, but it is a foundation skill rather than a terminal skill.

12 See <http://www.americasarmy.com/>

13 Available at <http://cyberboard.brainiac.com/> and at <http://www.vassalengine.org/> respectively

Knowing then end of the story is a problem in setting essays as assessments because events and issues which do not contribute to the outcome can be downplayed or disregarded. Difficulties of interpretation, where they do not bear directly on the final, known outcome, can be glossed over. Gaps in evidence, again unless they are critical, can also be ignored. For the history student, what we don't know and know we don't know, is not important unless it affects the result. Events always appear simpler in retrospect, and in the undergraduate essay, there are a variety of ways to slide past these difficulties without too much stress.

For Napoleon at Waterloo, what he didn't know and knew he didn't know – where was Grouchy's Corps? Where were the Prussians? – were matters of vital importance which weighed on his mind and indeed on the mind of Wellington across the valley all through the afternoon. Wellington's choice of the ridge at Mont St Jean as the site for his stand was conditioned by his belief that Blucher and the Prussians would join him there – even though he successfully had them removed from Siborne's famous model of the battlefield, the Duke's own particular contribution to writing the Prussian role out of the campaign in English historiography¹⁴.

I use Napoleon at Waterloo¹⁵ not only because the battle is famous but because the game of the same name is one of the most widely played introductory wargames. The battle and the campaign have been the subject of many treatments by game designers, but the 1971 game by Jim Dunnigan and Redmond Simonsen of Simulation Publications was definitive in many respects. A number of different aspects of wargame design came together in NAW, and while several of them had appeared previously in games like Gettysburg, Stalingrad or North Afrika, in many respects everything since NAW has been an embellishment on the basic wheel. The NAW system, with minor variations, was applied to a long series of games covering the Napoleonic Wars and the American Civil War, and lends itself to easy adaptation to cover other conflicts.

The full rules are available online in several places with commentary and examples, and in at least one case as a version which can be played against the computer. The game is played on a map of the battlefield on which movement is regulated by a hexagonal grid – you cannot march through the corner of a square!. The game proceeds on what is often called an IGO-UGO basis, with each player having alternate turns. In this case, the French player has the first turn and all French units may move and fight in the French turn, and so on. Each counter represents a division, that being by 1815 well established as a battlefield manoeuvre unit. Each counter in the first edition had a unit type symbol in standard NATO symbols, [this was slightly modified in later editions (although there are versions with stylised figures). There are two numbers on each counter. The right hand number is the units movement allowance, in hexes, over clear ground. Movement through towns, woods or other broken ground costs more movement points per hex; movement along roads costs ½ movement point per hex – all of this is summarised on the Terrain Effects Chart. One thing which people coming to wargames like this find different is that dice play no role in movement – every unit can move up to its full allowance in each game turn. Movement points cannot be saved up for use on later game turns – movement points represent the maximum speed that a unit could move at in the length of a game turn.

The other number represents combat strength, which in NAW is roughly based on actual unit size, scaled so that the smallest manoeuvre units represented in the game have a combat strength of 1. Units which were known to be of above average quality get extra strength points. The mathematics of the combat system will be dealt with later.

Presenting students with NAW and asking them to play the game confronts them with a very different perspective to simply asking them to write about the battle. If they have read even the most basic account of the battle, they will know the rough sequence of events – the initial French attacks on La Haye Sainte and Hougumont; the waves of unco-ordinated French infantry and

14 Hofschoer, Peter, *Wellington's Smallest Victory*, London, Faber & Faber, 2005

15 Dunnigan, James F. et al *Napoleon at Waterloo*, Simulations Publications Inc, 1971. There were some later editions with improved graphics. There is a complete set of rules, maps and counters, along with some discussion, online as part of Alan Emerich's Game Design Course, at http://www.alanemrich.com/PGD/Week_03/PGD_NAW_rules.htm

cavalry attacks on the Allied centre, counter-attack of the Union Brigade and the arrival of the Prussians and the final attack by the Imperial Guard late in the evening. Looking at the NAW map at the start of turn 1, the picture is quite different. The French have all these units, many of which Napoleon didn't move until late in the day. Suddenly there are a wealth of possibilities, and a range of choices to be made. La Haye Sainte is an obstacle which can be easily cleared, but there is no real need to have Jerome's entire corps tied up clearing Hougumont as it was on the day. The French players know there is a risk that the Prussians will arrive, but they must come by a limited number of roads which can easily be blocked by some of the weaker cavalry divisions. And why hold the Guard back until using them to strike a decisive blow on what is effectively the last game turn at 6pm? Why not drive them up the ridge and through the weaker German and Dutch-Belgian units at 2pm? There is no guarantee that a team of students playing the French will win, but it can certainly be expected that they will try harder than Napoleon did on the day. It is one thing to have students merely read about Napoleon's illness and how tactical decisions on the day were effectively delegated to the brave but rather dim Marshal Ney, but it is a different matter to confront them with the reality of the range of options available to the French if Napoleon had actually been alert. Waterloo is no longer a simple story of indigestion and defeat, but a complex web of interactions with a wealth of narrative possibilities.

Critical in those interactions in the game is the combat system – what happens at the sharp end is important. All units in NAW exert a 'Zone of Control' over the 6 hexes around them, and units which move into a 'Zone of Control' (Henceforth ZOC) must stop. Combat is mandatory between adjacent units, but the attacking player can choose which attacks to resolve and in which order. To resolve combat, the combat strengths of the attackers and defenders, modified if necessary by any terrain effects are reduced to a ratio, and a dice is rolled, giving a result which is checked against the ratio column on the Combat Results Table.

Dice, of course, like game, is a Bad Word. If one substituted a term like Random Number Generator or Stochastic Event Randomizer for Dice, some people would be much happier. However, if you want to produce a random result within a range of possibilities, nothing beats a simple die roll. There is a 16.666% chance of any single number coming up on a normal 6 sided dice. If you decide, based on a study of attacks in the Napoleonic era that an attack where the attacker outnumbers the defender by 3:1 will usually succeed (and the 3:1 is ratio is a commonly accepted military rule of thumb in most eras) you will find on the NAW Combat Results Table that a 3:1 attack will produce some sort of win for the attacker, without loss 83.333% of the time, although that must be qualified as without losses worth recording at the scale at which the game operates.

I do not propose to go into greater detail on the NAW system in this paper. The points I wish to make are that it is a simple enough set of rules to simulate combat from the "Age of Battles" in a useful way. It balances playability with a degree of realism based on historical research. It is easy to introduce to students. Since it was designed to simulate a one day battle on a conveniently sized mapsheet with a modest number of game counters, it works at a particular game scale. At this scale, logistics are not important, so they are ignored. Since NAW was designed as an introductory game, it has no rules to simulate fog of war, command and control or unit morale – but they could all be added. It has simple victory conditions – the requirement to destroy 40 enemy strength points and, for the French, exit units off part of the North map edge.

Once students having been exposed to playing wargames it is a logical step to ask them to design a wargame which simulates a particular battle. I have used wargames as teaching tools in both second and third year undergraduate options for many years. Wargame design is taught as a postgraduate option in War Studies at Kings College, London in a course which has run successfully since 2003. That course has taken students with no prior exposure to wargames and allows them to explore a wide range of novel and often idiosyncratic approaches to creating substantial simulations¹⁶.

In setting a wargame design exercise as part of a one semester undergraduate military history

16 See <http://www.kcl.ac.uk/schools/sspp/ws/consim.html> for more information, including links to the student designed games

course, the exercise was constrained for simplicity. Coursework for these options only carries 20% of the marks for a 5 credit module, and is usually about a 1,500 word essay. Students were required to produce a one page wargame, that is one where the map, counters and tables could all fit on a single A4 page. There are a number of examples of games of this size on the web, and indeed several good examples of simple wargames which fit on a standard postcard.

The exercise was set as a group task for groups of 4 to 6. Groups were required to meet regularly or to interact using a discussion board, and report progress at least once a week. This was new to humanities students who are accustomed to working alone, and often leave essays until the last minute. The students, 40 second year undergraduates, chose the course as one of their elective options, but had no prior warning about the coursework task. They may have had some knowledge through the undergraduate grapevine that my coursework often falls outside the normal departmental 'comfort zone'

At no point was the exercise advertised as being "problem" or "inquiry" based learning, but active inquiry to resolve problems was certainly an implicit part of the exercise. Since the information and analyses in conventional textbooks was often not arranged to answer the problems which arose, students had to unpack conventional analyses or seek primary sources to resolve the problems which they encountered.

One of the difficulties with the conventional essay as a "performance of understanding" in history is that the history essay sweeps across all the levels of Blooms taxonomy of learning. A first class piece of historical writing will display "historical understanding" in how the student selects appropriate evidence and deploys some historical facts in comparison and contrast to support synthesis and analysis. Students who come from a second level curriculum which tends to stress the lower levels of the Bloom Taxonomy¹⁷, are, in university, told that the higher levels are what is now important. This is a difficult transition for some students – some cling to gathering facts, and never manage a decent argument, while others leap on to construct bricks of straw; arguments with no real substantial evidence. Students presume they know how to write; confronted with a radically different task, they know they have to step through the design process more carefully.

Blooms Taxonomy	Essay	Wargame Design	Grading Issues
Evaluation	Historical debates, Hist Understanding,	Design notes	Reflection on the nature of the game and how it represents real events
Synthesis		Games rules in total, Special rules, victory conditions	Game mechanics working as a linked system
Analysis	Linkages, relationships	Game rules – cases (move, fire etc)	Simple game processes on a case by case basis
Application		Design counters, map	Meaningful representation of elements
Comprehension	Significant facts?	Table of Organisation & Equipment,	Relations and organisaion of participants
Knowledge	facts	Order Of Battle, Map	Completeness of data

At a mundane level, students had to actually pay attention to the basic nuts and bolts of the particular battle. They had to find reasonable maps of the battle and reproduce them on a hex

17 There are many excellent web references to Blooms work. A particularly elegant visual version is at http://en.wikipedia.org/wiki/Image:Blooms_rose.svg.

grid of limited size. They had to find information on the order of battle – how many troops were present and how were they organised and decide how to represent those troops with a limited number of counters. Most groups made some effort to think about how they would allocate more (or fewer) strength points to units to reflect troop quality. The simple task of putting together a map and counters required engaging with the totality of the event, and not just the key locations or the important units. It also required students to think about issues like ground and time scales, and to think about what was an appropriate ground and time scale to capture the essence of a battle. In the period from Breitenfeld in 1632 to Gettysburg in 1863 the size of armies, the extent of battlefields, the range of weapons and the speed at which armies move on the field of battle all change. While history is, or has been hitherto, a narrative discipline, this exercise forced the students to work visually, and tell the story of the battle in a different way, using a different intelligence¹⁸.

“Plagiarism” was encouraged in at least one respect. Given the substantial amount of research required to validate any movement and combat rules against historical data, students were strongly encouraged to use either NAW rules or one of a number of similar rules sets to handle the basic mechanics of movement and combat¹⁹. They were however required to write, and playtest, 2 or 3 optional or extra rules which captured distinctive aspects of the battle which they were modelling. This was the most intellectually demanding part of the task.

This part of exercise required students to confront the problem of history as a discipline in which deals with unique events. At Breitenfeld, the Saxons broke and ran right at the start of the battlefield, abandoning their Swedish allies. It is arguable that without the flight of the Saxons, the eventual Swedish victory might not have been as decisive but you can hardly write a rule which requires the Saxons to run away on Turn 1. At Rossbach, Frederick the Great's victory came not by virtue of the inherent superiority of the Prussian army, which is easy enough to systematically represent, but because of the naivety of the Allied Commanders who cleverly managed to get into a position where Frederick, outnumbered 2 to 1, was able to destroy their army as an effective force. At Gettysburg, Richard Ewell's failure to take Culps Hill and the north end of Cemetery Ridge on the evening of the first day was an important failure. Ewell was known to be fussy about his diet, since he suffered from dyspepsia, and the decision to write a special rule under which his illness could randomly activate and take his *corps* out of command was interesting, although not as it turned out the best way to deal with his failure which was more to his caution and timidity than his digestion. For Fredericksburg students debated how they would handle Banks Ford on the game map, since Burnside failed to use it as a crossing point even though later that winter his infamous 'mud march' was directed towards crossing the Rappahanock at that point. The particular problems which students stuck on were not always the ones which dominate the historiography of those battles, but they were problems which drove students think and to go back to their sources in search for answers. These design problems also confronted students with the problem of reconciling a general simulation of battlefield tactics in a particular era with unique events which gave particular battles a distinctive shape, and indeed to consider which unique circumstances or events were truly significant enough for the outcome to warrant being explicitly modeled in the rules. Students were encouraged to see the full range of possibilities inherent in the situation, identify the options which were or were not pursued by the commanders on the day, understanding how the situation was 'framed' by the commanders. The game required students to demonstrate 'historical imagination' by understanding the internal decisionmaking process of commanders from very different chronological and cultural contexts²⁰.

The exercise worked well because of its parameters. In every group, there were people who had

18 See, *inter alia*, Gardner, Howard, *Intelligence Reframed: Multiple Intelligences for the 21st Century*, New York, Basic Books, 1999.

19 See, for example Dupuy, Col. Trevor N. *Numbers, Prediction And War*, Fairfax, VA, Hero Books, 1985; *The Evolution of Weapons and Warfare*, New York, Da Capo, 1984

20 The terms 'historical imagination' and 'understanding' have profound and sometimes contested meaning in the discipline of history – see Collingwood, R.G., *The Idea of History*, (Oxford, University Press, 1994) and Gallie, W *Philosophy and the Historical Understanding*, (London, Chatto & Windus, 1964) for starting points in these debates.

problems with some parts of it, but every group was able to produce a game which was playable, and which modeled the particular battles reasonably well. Although the students were explicitly told several times that graphic presentation was not a consideration in the grading in many cases was at least as good as commercially produced wargames from the 1970s.

Hex and counter based 'board' wargames are a fairly specialised genre of game. Even within the field of wargaming, there are other game mechanics - area movement games, or card based games with no "board" as such like *Hoplites* or *Modern Naval Battles*. Close cousins are games like *Civilization*, *Europa Universalis*, *Settlers of Catan* or *Puerto Rico*. There are political games like *The Making of the President*, *Twilight Struggle*, *Days of Decision* or even the old classic *Diplomacy*. There are popular collectible card games like *Magic the Gathering* or more interestingly the first edition of the *Star Trek CCG* or the *Call of Cthulu* game in which cards provided locations or plot developments. Many of these do have complex 'chrome' in their rules, but the basic mechanics of many of these genres of game are simple enough.

Once the scale of the game moves away from operational warfare to strategic or grand strategic, supplies and resources become as important as the mechanics of combat. Limited pools of supply points force players to make choices in how they allocate those supplies between different theatres. In games which model global grand strategy over extended periods, basic resources points earned from control of territory, population or technology need to be expanded not just on regular operations, but invested in technology research or in political influence. At this level, the continuum of games slides easily from wargames like *Advanced Third Reich* to political games like *Twilight Struggle*, *Days of Decision* and boardgame versions of *Civilization*. All of these games are about allocating resources between controlling territory now or investing it in future advances. This is a choice which arises not just in military or political history, but in many domains, especially of the social sciences. The other great metaphor of gaming, the heroic journey from roleplaying games, is important for many of the humanities disciplines.

The most commonly accepted creation story for roleplaying games is that the genre grew out of an expansion to the *Chainmail* wargame rules which sought to model the effects on individual medieval soldiers of the presence of religious artifacts on the battlefield, and the terrors associated with delving into the bowels of the dark earth in mining and countermining operations in medieval sieges.

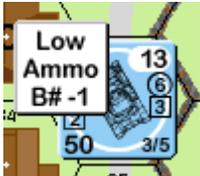
A key advantage of a board game over a computer game is that in the boardgame, the rules are explicit whereas in a computer game the actual game mechanics are usually a black box. Off-the-shelf computer games like *Civilization* or *Age of Empires* can be used in education, and there are documented cases of these games being used at secondary level²¹. However, all game designs are subject to the biases of the game designer, and where those biases are buried in copyrighted program code, it is impossible to expose, discuss and correct them. Some computer games are mostly right but the historical inaccuracies of games like *Rome:Total War* limit their use for teaching. In a boardgame, if the designer has made a serious mistake, it can be rectified with a house rule. More importantly, as indicated above, very few academics will be able to command the resources in money, time and skills to design a useful computer game in our subject area. There is no handy toolkit for designing and deploying graphically competitive and pedagogically useful computer simulations and games. There is certainly nothing which we could use to set our students to do a computer based game design exercise without devoting some time to teaching them how to use the technology. There are some modelling and simulation tools in the science, engineering and business areas, including the widespread use of spreadsheet based simulations in business but these do not easily lend themselves to use in the humanities. It is of course likely that the tools required to create computer and console based teaching games in the humanities will emerge in time. However, if we are to seek these tools, we do need a better understanding of how old fashioned tools like pen and paper can be used to create 'edugames'.

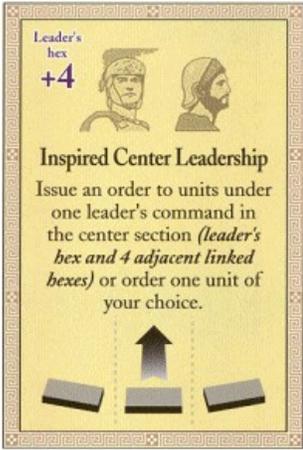
Games for use in class need to be fairly simple, quick to learn, complex enough to be interesting and playtested so that the range of possible outcomes is understood. However, if you are setting your class a game design task as an exercise, there are no right answers and therefore no wrong

21 Squire, Kurt, *Replaying history: learning world history through playing Civilization III*, Phd thesis, Instructional Systems Technology Department, Indiana University, January 2004.

questions. The question "Design a game about X" is open-ended and the important thing is not reaching the destination, but making the journey. That journey requires students to think about the elements which they need to represent in the game or simulation, how to represent them, and how do the game elements interact. The important thing for students designing a game is to ask questions, seek answers and, without the benefit of hindsight, unlike Napoleon at Waterloo, come up with a plan to find out what you don't know - "Where is Grouchy?"

What elements are there in the game?

Wargame	Example	General	Your Game?																																																				
Map		Location, Game Board, Game Space																																																					
Units - Troops		Pieces, Elements																																																					
Movement	<p>Terrain Effects Chart</p> <table border="1" data-bbox="477 1003 789 1213"> <thead> <tr> <th>Symbol</th> <th>Terrain</th> <th>Movement Effect (MPs to enter)</th> <th>Combat Effect* (Shifts left on CRT)</th> </tr> </thead> <tbody> <tr> <td></td> <td>Road</td> <td>1, but only along connected road hexside</td> <td>None</td> </tr> <tr> <td></td> <td>Clear</td> <td>2</td> <td>None</td> </tr> <tr> <td></td> <td>Rough</td> <td>3</td> <td>⇐1</td> </tr> </tbody> </table>	Symbol	Terrain	Movement Effect (MPs to enter)	Combat Effect* (Shifts left on CRT)		Road	1, but only along connected road hexside	None		Clear	2	None		Rough	3	⇐1	Process																																					
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Supplies		Resources																																																					

Commanders	 <p>A card for Gustav II, a leader unit. It features a portrait of Gustav II, the name "Gustav II", the range "A-L", and a cost of "-2".</p>	Pieces, Elements	
Command & Control	 <p>A card titled "Inspired Center Leadership" with a "+4" cost. It features two leader portraits and the text: "Issue an order to units under one leader's command in the center section (leader's hex and 4 adjacent linked hexes) or order one unit of your choice." Below the text is a diagram showing a central hex with an upward arrow and four adjacent hexes.</p>	Process	
Morale, Cohesion, Troop Quality	 <p>A card titled "DISRUPT" with a cost of "8²3-8". It features a small image of a soldier and the text: "No: Nml Rout Self Rally".</p>	Resource or Process	
Influence , Political Events	 <p>A collection of three cards on a blue background:</p> <ul style="list-style-type: none"> ARAB-ISRAELI WAR: ADDS 2 TO SOV OPS WILL ADD 2 VP. WILL NOT REPLACE INFLUENCE OR CONTROL. BLOCKADE: WILL REMOVE US INFLUENCE IN W. GERMANY OR REPORT EVENT CANCELLED. WILL NOT CHANGE CONTROL. CAPTURED NAZI SCIENTIST: WILL ADVANCE PLAYERS SPACE RACE 1 SPOT. Includes a "WANTED" sign and the word "ALIVE" below a portrait. 	Resources	