0 *A.D. is* **A***ctually* **B***efore* **C***hrist*

`https://github.com/0abc/0abc-unified.git`

A modification of *0 A.D. Empires Ascendant*
version 0.0.22 *Alpha XXII: Venustas*

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`https://wildfiregames.com/forum/index.php?/topic/22779-0abc-mod/`

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Contents

1 Introduction

0abc is an acronym for "0 A.D. is Actually Before Christ". Of the twelve civilizations and factions included in the default distribution, three (Britons, Gauls, Iberians) cover the whole period (c. 500–1 B.C.), three (Athenians, Persians, Spartans) the Classical period (c. 500–300 B.C.), and six (Carthaginians, Macedonians, Mauryans, Ptolemies, Romans, Seleucids) the Hellenistic period (c. 350–150 B.C.); civilizations (Armenia, Numidia, Parthia, Pontus) peaking in the last two centuries (c. 200–1 B.C.) are noticeably lacking.

This mod, however, does not include any new factions. It tweaks, rebalances, and improves upon what already exists in the game. Amongst other things, it contains a moderate bonus attack counter and penalty system, more experience promotion ranks (0–12), and a new resource (silver).

0abc serves as a showcase for what 0 A.D. easily could be at the moment, as a playground for me experimenting with modifying the game to get used to the code structure, and as a platform for including my own opinions and views to have the game the way I like it. Being a test mod of an alpha-stage game, it is inherently imperfect, unfinished, and restricted by my limited programming skills and the files available in 0 A.D.'s latest stable release.

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1.1 Instructions

- Use `git clone https://github.com/0abc/0abc-unified.git` to get the repository directly or download it as a zip via `https://github.com/0abc/0abc-unified/archive/master.zip`
- Place it in your `/0ad/mods/` folder:

  GNU/Linux (e.g. Fedora) typically: `~/.local/share/0ad/mods/`

  Macintosh/Apple OS X typically: `~/Library/Application\Support/0ad/mods/`

  Microsoft Windows typically: `~\Documents\My Games\0ad\mods\`
- Launch 0 A.D., click "Tools & Options" and "Mod Selection"
- Select `0abc`, click "Enable" and "Save Configuration"
- Add, remove, or move up or down any other mods, click "Save Configuration" and "Start Mods"
- Click "Learn To Play" and "Structure Tree" to see the mod(s) implemented.

1.2 Intended but not yet implemented

- Units can occupy more than one garrison slot (e.g. infantry one, cavalry two, elephants six).
- Domestic animals start at e.g. 20% of maximum food and gradually fatten to 100%.
- Fruit trees contain both food and wood; right-click to gather food, control-right-click to cut the tree and collect wood; when food is reduced to 0 it does not disappear but stays, allowing it to regrow fruit and be harvested again later; when cutting starts, the tree is killed, does not have any food any more, and completely disappears when all wood is gathered.
- Farmstead serves as a dropsite for food.fruit and food.grain (but not food.meat) and corral as a dropsite for food.meat (but not other food types).
- Trader gain is 100% silver; bartering resources is always possible, also without a market.

1.3 Further information

People interested in Antiquity are lucky to live nowadays. Thanks to widespread digitization, availability of sources is no longer a problem; the choice of sources is. Wikipedia is a mixed blessing which has to be used with care: some articles are much better than corresponding lemmas of paper encyclopaedias, others contain outright rubbish and dangerous nonsense. *The Cambridge History of Greek and Roman Warfare* (2007) is a decent starting point. Those without access to a university library and looking for something specific can contact me.[1]

[1] `https://wildfiregames.com/forum/index.php?/profile/21417-nescio/`

2 Units

2.1 General overview

- All soldiers (except for war dogs) require at least some metal, to encourage feminization.
- All soldiers (citizen, mercenary, and champion) can promote up to twelve times; each rank grants +5% health, attack damage, and capture attack, melee units also receive +1% movement speed and ranged units −1% spread.

  Healers receive +5% health, −5% healing time, and +1 m healing range every promotion.
- Loot is standardized to 10% of costs, experience is equal to the sum of the total costs.

2.1.1 Worker rates

	fishing boat	female	slave	citizen (melee)	citizen (ranged)	mercenary	champion	hero
build (structure)	–	–	1.00	1.00	1.00	1.00	–	–
farm (food.grain)	–	0.50	0.35	0.30	0.25	–	–	–
fish (food.fish)	1.50	0.50	0.50	0.70	0.75	–	–	–
forage (food.fruit)	–	1.00	0.50	0.50	0.50	–	–	–
hunt (food.meat)	2.00	0.75	0.80	0.90	1.00	–	–	–
lumber (wood.tree)	–	0.70	1.00	0.75	0.75	–	–	–
mine (metal.ore)	–	0.35	1.00	0.50	0.50	–	–	–
quarry (stone.rock)	–	0.35	1.00	0.50	0.50	–	–	–
promote	no	no	no	yes	yes	yes	yes	no
local aura	no	yes	no	no	no	no	no	yes
global aura	no	no	no	no	no	no	no	yes

2.1.2 Soldier types

	infantry	camel	cavalry	biga chariot	quadriga chariot	elephant
mercenary food cost	−60%	−60%	−60%	−60%	−60%	−60%
mercenary metal cost	+20.0	+25.0	+30.0	+50.0	+75.0	+100.0
mercenary wood cost	+0.0	+0.0	+0.0	+0.0	+0.0	+0.0
mercenary training time	−25%	−25%	−25%	−25%	−25%	−25%
mercenary health	+0%	+0%	+0%	+0%	+0%	+0%
mercenary armour (h, c, p)	+1.0	+1.0	+1.0	+1.0	+1.0	+1.0
mercenary attack damage	+15%	+15%	+15%	+15%	+15%	+15%
mercenary capture strength	+0%	+0%	+0%	+0%	+0%	+0%
champion metal cost	+70.0	+90.0	+100.0	+120.0	+150.0	+200.0
champion wood cost	+30.0	+40.0	+50.0	+60.0	+75.0	+100.0
champion training time	+150%	+150%	+150%	+150%	+150%	+150%
champion health	+50%	+50%	+50%	+50%	+50%	+50%
champion armour (h, c, p)	+3.0	+3.0	+3.0	+3.0	+3.0	+3.0
champion attack damage	+100%	+100%	+100%	+100%	+100%	+100%
champion capture strength	+100%	+100%	+100%	+100%	+100%	+100%

NB: Citizen soldiers are 100%. Champions also require twice as much experience to advance in rank. (Heroes can not promote.) Other unit statistic bonuses are removed.

2.1.3 Unit categories

	population slots occupied	**standard food cost**	**food carry capacity**	**food.meat gather rate**	**vision range** (metres)	**promotion experience requirement**
War dogs	0	75	–	–	60	75
Healers	1	50	–	–	60	250
Infantry	1	50	10	1.0	75	100
Camels	2	90	40	1.8	85	125
Cavalry	2	100	30	2.0	80	150
Bigae (two-horse chariots)	4	200	60	3.6	80	200
Three-man bigae	5	250	60	3.6	80	220
Quadrigae (four-horse chariots)	6	300	60	3.6	80	240
War elephants	6	300	75	3.0	90	300

2.2 Unit statistics comparison tables

NB: The new values are displayed normally, the default "0 A.D. Alpha XXII: Venustas" values are displayed for comparison between brackets ().

2.2.1 Infantry units

class	pop. size	training costs (f, w, m, s; time)	loot (f, w, m, s; exp)	vision range	speed	health	armour (h, p, c)	damage (h, p, c)	range (m)	rate (ms)	counters/ penalties
war dog	0	75, 0, 0, 0; 10	8, 0 0, 0; 75	60	15+15	75	1, 2, 1	4, 4, 0	3	1000	0.75× vs Camelry, Cavalry,
(non-human)	(0)	(100, 0, 0, 0; 15)	(10, 0, 0, 0; 100)	(30)	(14.5+11.5)	(90)	(1, 2, 1)	(7, 2, 0)	(3)	(1000)	Chariotry, 0.5× vs Elephantry
crossbow	1	50, 30, 20, 0; 10	5, 3, 2, 0; 100	75	8+8	50	1, 3, 5	0, 4, 2	60	1000	1.5× vs Archer Cavalry
archer infantry[2]	(1)	(50, 50, 0, 0; 10)	(5, 5, 0, 0; 100)	(80)	(8+10)	(50)	(1, 1, 10)	(0, 6, 0)	(72)	(1000)	0.5× vs Elephantry
composite bow	1	50, 35, 15, 0; 10	5, 4, 1, 0; 100	75	10+8	50	2, 2, 2	0, 6, 0	60	1000	1.5× vs Archer Cavalry
archer infantry	(1)	(50, 50, 0, 0; 10)	(5, 5, 0, 0; 100)	(80)	(8+10)	(50)	(1, 1, 10)	(0, 6, 0)	(72)	(1000)	0.5× vs Elephantry
longbow	1	50, 40, 10, 0; 10	5, 4, 1, 0; 100	75	10+8	50	2, 2, 2	0, 5, 0	60	1000	1.5× vs Archer Cavalry
archer infantry[1]	(1)	(50, 50, 0, 0; 10)	(5, 5, 0, 0; 100)	(80)	(8+10)	(50)	(1, 1, 10)	(0, 6, 0)	(72)	(1000)	0.5× vs Elephantry
lead bullet	1	50, 30, 20, 0; 10	5, 3, 2, 0; 100	75	12+8	55	1, 2, 3	0, 4, 0	75	1000	1.5× vs Archer Infantry
sling infantry	(1)	(50, 20, 0, 30; 10)	(5, 0, 0, 5; 100)	(80)	(11+13)	(50)	(1, 1, 10)	(0, 9.5, 1)	(48)	(1000)	
sling stone	1	50, 40, 10, 0; 10	5, 4, 1, 0; 100	75	12+8	55	1, 2, 3	0, 0, 6	45	1000	1.5× vs Archer Infantry
sling infantry[1]	(1)	(50, 20, 0, 30; 10)	(5, 0, 0, 5; 100)	(80)	(11+13)	(50)	(1, 1, 10)	(0, 9.5, 1)	(48)	(1000)	0.125× vs Structures
javelin	1	50, 45, 5, 0; 10	5, 5, 0, 0; 100	75	14+8	60	2, 3, 4	0, 10, 0	30	1000	1.25× vs Archer units
infantry	(1)	(50, 50, 0, 0; 10)	(5, 5, 0, 0; 100)	(80)	(13.5+10.5)	(50)	(1, 1, 10)	(0, 16, 0)	(24)	(1250)	
throwing axe	1	50, 30, 20, 0; 10	5, 3, 2, 0; 100	75	13+5	65	3, 4, 5	9, 0, 0	15	1000	1.5× vs Spear Infantry
infantry[2]	(1)	(50, 50, 0, 0; 10)	(5, 5, 0, 0; 100)	(80)	(13.5+10.5)	(50)	(1, 1, 10)	(0, 16, 0)	(24)	(1250)	
axe	1	50, 35, 15, 0; 10	5, 4, 1, 0; 100	75	12+3	85	5, 5, 5	5, 0, 1	2	1000	1.5× vs Siege weapons,
infantry[1]	(1)	(50, 40, 10, 0; 10)	(5, 5, 0, 0; 100)	(80)	(9.5+6.5)	(100)	(5, 5, 15)	(5.5, 0, 0)	(2)	(750)	2.0× vs Elephantry
mace	1	50, 30, 20, 0; 10	5, 3, 2, 0; 100	75	11+4	90	4, 6, 8	0, 0, 8	2	1000	1.5× vs Hoplite and Cataphract units
infantry[1]	(1)	(50, 40, 10, 0; 10)	(5, 0, 5, 0; 100)	(80)	(9.5+6.5)	(100)	(5, 5, 15)	(0, 0, 5.5)	(2)	(750)	0.125× vs Structures
curved (sabre)	1	50, 20, 30, 0; 10	5, 2, 3, 0; 100	75	10+5	95	5, 6, 7	7, 0, 0	2	1000	–
sword infantry[1]	(1)	(50, 40, 10, 0; 10)	(5, 0, 5, 0; 100)	(80)	(9.5+6.5)	(100)	(5, 5, 15)	(5.5, 0, 0)	(2)	(750)	
two-handed	1	50, 20, 30, 0; 10	5, 2, 3, 0; 100	75	10+5	95	6, 6, 6	6, 2, 0	3	1000	–
sword infantry[1]	(1)	(50, 40, 10, 0; 10)	(5, 0, 5, 0; 100)	(80)	(9.5+6.5)	(100)	(5, 5, 15)	(5.5, 0, 0)	(2)	(750)	
short (broad)	1	50, 20, 30, 0; 10	5, 2, 3, 0; 100	75	10+5	95	6, 7, 8	4, 4, 0	2	1000	–
sword infantry	(1)	(50, 40, 10, 0; 10)	(5, 0, 5, 0; 100)	(80)	(9.5+6.5)	(100)	(5, 5, 15)	(5.5, 0, 0)	(2)	(750)	
halberd	1	50, 35, 15, 0; 10	5, 3, 2, 0; 100	75	11+4	85	5, 5, 5	3, 3, 0	3	1000	2.0× vs Cavalry
infantry[2]	(1)	(50, 50, 0, 0; 10)	(5, 5, 0, 0; 100)	(80)	(7+2)	(100)	(10, 10, 15)	(1, 3, 0)	(8)	(2000)	
spear	1	50, 40, 10, 0; 10	5, 4, 1, 0; 100	75	10+5	90	5, 6, 7	0, 6, 0	4	1000	1.5× vs Ranged Cavalry
infantry	(1)	(50, 50, 0, 0; 10)	(5, 5, 0, 0; 100)	(80)	(8.5+6.5)	(100)	(5, 5, 15)	(3, 2.5, 0)	(4)	(1000)	
hoplite	1	50, 25, 25, 0; 10	5, 2, 3, 0; 100	75	8+6	100	7, 8, 9	0, 5, 0	4	1000	1.25× vs Cavalry
infantry[1]	(1)	(50, 50, 0, 0; 10)	(5, 5, 0, 0; 100)	(80)	(8.5+6.5)	(100)	(5, 5, 15)	(3, 2.5, 0)	(4)	(1000)	
pike	1	50, 45, 5, 0; 10	5, 5, 0, 0; 100	75	9+3	80	4, 5, 6	0, 4, 0	6	1000	1.25× vs Chariotry, 1.5× vs Cavalry,
infantry	(1)	(50, 50, 0, 0; 10)	(5, 5, 0, 0; 100)	(80)	(7+2)	(100)	(10, 10, 15)	(1, 3, 0)	(8)	(2000)	1.75× vs Camelry, 2.0× vs Elephantry

NB: **1**: A new class to which existing units are reassigned; **2**: A new class which currently remains unused

2.2.2 Mounted units

class	pop. size	training costs (f, w, m, s; time)	loot (f, w, m, s; exp)	vision range	speed	health	armour (h, p, c)	damage (h, p, c)	range (m)	rate (ms)	counters/ penalties
archer	2	90, 40, 10, 0; 12	9, 4, 1, 0; 150	85	27+8	108	1, 1, 5	0, 6, 0	68	1000	1.5× vs Traders
camel[1]	(1)	(100, 40, 0, 0; 12)	(10, 0, 5, 0; 130)	(92)	(17.5+10.5)	(120)	(3, 1, 15)	(0, 7, 0)	(72)	(1000)	0.5× vs Elephantry
spear	2	90, 40, 10, 0; 12	9, 4, 1, 0; 150	85	28+7	144	2, 3, 5	0, 7, 0	5	1000	1.5× vs Cavalry
camel[2]	(1)	(80, 55, 0, 0; 12)	(10, 0, 5, 0; 130)	(92)	(22+18)	(160)	(1, 1, 10)	(6, 13, 0)	(6)	(3500)	0.5× vs Elephantry
crossbow	2	100, 30, 20, 0; 14	10, 3, 2, 0; 150	80	16+14	110	2, 2, 7	0, 4, 2	64	1000	1.25× vs Cavalry
cavalry[2]	(1)	(100, 40, 0, 0; 12)	(10, 0, 5, 0; 130)	(92)	(17.5+10.5)	(120)	(3, 1, 15)	(0, 7, 0)	(72)	(1000)	0.5× vs Elephantry
archer	2	100, 35, 15, 0; 14	10, 4, 1, 0; 150	80	22+8	120	1, 1, 7	0, 7, 0	64	1000	1.5× vs Sword Cavalry
cavalry	(1)	(100, 40, 0, 0; 12)	(10, 0, 5, 0; 130)	(92)	(17.5+10.5)	(120)	(3, 1, 15)	(0, 7, 0)	(72)	(1000)	0.5× vs Elephantry
javelin	2	100, 40, 10, 0; 14	10, 4, 1, 0; 150	80	21+9	130	1, 2, 7	0, 12, 0	32	1000	1.5× vs Chariotry
cavalry	(1)	(100, 40, 0, 0; 12)	(10, 0, 5, 0; 130)	(92)	(17.5+10.5)	(120)	(3, 1, 15)	(0, 18, 0)	(28)	(1250)	–
axe	2	100, 35, 15, 0; 14	10, 3, 2, 0; 150	80	20+10	140	2, 2, 7	6, 0, 2	4	1000	1.5× vs Siege weapons
cavalry[1]	(1)	(80, 35, 20, 0; 12)	(10, 0, 5, 0; 130)	(92)	(20+8.75)	(160)	(4, 2, 15)	(6.5, 0, 0)	(6)	(750)	0.5× vs Elephantry[0]
sword	2	100, 25, 25, 0; 14	10, 2, 3, 0; 150	80	19+11	150	3, 3, 7	8, 0, 0	4	1000	1.5× vs Slinger Infantry
cavalry	(1)	(80, 35, 20, 0; 12)	(10, 0, 5, 0; 130)	(92)	(20+8.75)	(160)	(4, 2, 15)	(6.5, 0, 0)	(6)	(750)	0.5× vs Elephantry[0]
spear	2	100, 30, 20, 0; 14	10, 3, 2, 0; 150	80	18+12	160	5, 5, 7	0, 8, 0	4	1000	1.5× vs Archer Infantry
cavalry	(1)	(80, 55, 0, 0; 12)	(10, 0, 5, 0; 130)	(92)	(22+18)	(160)	(4, 3, 15)	(6, 13, 0)	(6)	(3500)	0.5× vs Elephantry[0]
lance	2	100, 20, 30, 0; 14	10, 2, 3, 0; 150	80	17+13	170	4, 4, 7	0, 8, 2	4	1000	1.5× vs Javelin Infantry
cavalry[1]	(1)	(80, 55, 0, 0; 12)	(10, 0, 5, 0; 130)	(92)	(22+18)	(160)	(4, 3, 15)	(6, 13, 0)	(6)	(3500)	0.5× vs Elephantry[0]
archer	4	200, 80, 40, 0; 16	20, 8, 4, 0; 320	80	16+9	200	5, 3, 9	0, 8, 0	64	1000	–
biga chariot[1,3]	(1)	(250, 100, 100, 0; 40)	(10, 10, 20, 0; 150)	(96)	(20.5+7.5)	(270)	(7, 5, 20)	(0, 14, 0)	(76)	(1000)	0.5× vs Elephantry
javelin	4	200, 90, 30, 0; 16	20, 9, 3, 0; 320	80	16+9	214	5, 3, 9	0, 16, 0	32	1000	–
biga chariot[1,3]	(1)	(250, 100, 100, 0; 40)	(10, 10, 20, 0; 150)	(96)	(20.5+7.5)	(270)	(7, 5, 20)	(0, 36, 0)	(32)	(1250)	0.5× vs Elephantry
three-man	5	250, 120, 50, 0; 16	25, 12, 5, 0; 420	80	16+9	240	5, 3, 9	0, 12, 0	64	1000	–
biga chariot[2]	(1)	(250, 100, 100, 0; 40)	(10, 10, 20, 0; 150)	(96)	(20.5+7.5)	(270)	(7, 5, 20)	(0, 14, 0)	(76)	(1000)	0.5× vs Elephantry
scythed	6	300, 100, 75, 0; 18	30, 10, 8, 0; 475	80	18+9	280	6, 3, 9	0, 9, 0	64	1000	–
quadriga chariot[1,3]	(1)	(250, 100, 100, 0; 40)	(10, 10, 20, 0; 150)	(96)	(20.5+7.5)	(270)	(7, 5, 20)	(0, 14, 0)	(76)	(1000)	0.5× vs Elephantry
archer	6	300, 100, 100, 0; 24	30, 10, 10, 0; 500	90	9+9	450	4, 7, 10	0, 8, 0	72	1000	1.5× vs Camelry
elephant[1]	(1)	(200, 80, 20, 0; 12)	(25, 10, 5, 0; 260)	(92)	(8.5+5.5)	(240)	(4, 3, 15)	(0, 10.5, 0)	(72)	(750)	0.5× vs Elephantry
melee war	6	300, 50, 100, 0; 24	30, 5, 10, 0; 450	90	9+9	500	6, 9, 12	0, 0, 30	6	1000	–
elephant[1,3]	(3)	(250, 0, 250, 0; 30)	(10, 10, 20, 0; 150)	(100)	(8.5+5.5)	(750)	(10, 10, 25)	(20, 0, 150)	(8)	(1500)	0.125× vs Structures

NB: **0**: All melee cavalry (axe, sword, spear, lance) also has a 0.75× penalty vs Camelry and Chariotry;
1: A new class to which existing units are reassigned;
2: A new class which currently remains unused;
3: Comparison values are champions

2.2.3 Ships

class	pop. size	training costs (f, w, m, s; time)	loot (f, w, m, s; exp)	garrison capacity	vision range	speed	health/ capture	armour (h, p, c)	damage (h, p, c)	range (m)	rate (ms)	arrow count
fishing boat	0	10, 40, 0, 0; 10	1, 4, 0, 0; 5	1	60	10+2	150/–	2, 4, 2	10, 0, 0	5	1000	–
(resource gatherer)	(1)	(0, 50, 0, 0; 20)	(0, 10, 0, 0; 1)	(1)	(24)	(10+0)	(200/–)	(2, 5, 2)	(10, 0, 0)	(5)	(1000)	(–)
merchant ship	0	25, 150, 75, 0; 20	3, 15, 7, 0; 25	15	75	12+3	600/–	3, 6, 3	–	–	–	–
(trader)	(1)	(0, 0, 100, 0; 20)	(0, 15, 0, 0; 25)	(15)	(50)	(12+0)	(400/–)	(2, 5, 2)	(–)	(–)	(–)	(–)
small barge	0	50, 100, 50, 0; 15	5, 10, 5, 0; 100	10	100	14+4	450/–	4, 8, 4	0, 12, 0	60	1000	2–5
(transport) [2]	(3)	(0, 150, 150, 0; 40)	(0, 30, 20, 0; 100)	(40)	(90)	(14+4)	(1600/–)	(5, 10, 5)	(0, 25, 0)	(55)	(2000)	(3–13)
medium barge	0	50, 200, 50, 0; 20	5, 20, 5, 0; 150	20	100	14+4	900/–	5, 10, 5	0, 12, 0	60	1000	2–8
(transport) [1]	(3)	(0, 150, 150, 0; 40)	(0, 30, 20, 0; 100)	(40)	(90)	(14+4)	(1600/–)	(5, 10, 5)	(0, 25, 0)	(55)	(2000)	(3–13)
large barge	0	50, 400, 50, 0; 25	5, 40, 5, 0; 250	40	100	14+4	1800/–	6, 12, 6	0, 12, 0	60	1000	2–14
(transport) [1]	(3)	(0, 150, 150, 0; 40)	(0, 30, 20, 0; 100)	(40)	(90)	(14+4)	(1600/–)	(5, 10, 5)	(0, 25, 0)	(55)	(2000)	(3–13)
huge barge	0	50, 800, 50, 0; 30	5, 80, 5, 0; 450	80	100	14+4	3600/–	7, 14, 7	0, 12, 0	60	1000	2–26
(transport) [2]	(3)	(0, 150, 150, 0; 40)	(0, 30, 20, 0; 100)	(40)	(90)	(14+4)	(1600/–)	(5, 10, 5)	(0, 25, 0)	(55)	(2000)	(3–13)
fire ship	0	0, 150, 0, 0; 15	–	0	60	20+0	450/–	5, 10, 5	5, 5, 5	10	100	–
(floating bonfire)	(1)	(0, 300, 0, 0; 30)	(–)	(0)	(60)	(17.5+4.5)	(500/–)	(5, 10, 5)	(10, 10, 10)	(8)	(100)	(–)
skiff	0	60, 60, 30, 0; 10	6, 6, 3, 0; 75	6	100	18+2	300/–	5, 10, 5	0, 12, 0	60	1000	1–3
(small galley) [1]	(2)	(0, 125, 50, 0; 20)	(0, 25, 15, 0; 75)	(20)	(90)	(14+4)	(800/–)	(5, 10, 5)	(0, 35, 0)	(45)	(2000)	(2–10)
unireme	0	100, 100, 50, 0; 15	10, 10, 5, 0; 125	10	100	17+3	500/–	5, 10, 5	0, 12, 0	60	1000	1–4
(light galley) [1]	(2)	(0, 125, 50, 0; 20)	(0, 25, 15, 0; 75)	(20)	(90)	(14+4)	(800/–)	(5, 10, 5)	(0, 35, 0)	(45)	(2000)	(2–10)
bireme	0	200, 200, 100, 0; 20	20, 20, 10, 0; 250	20	100	16+4	1000/–	6, 12, 6	0, 12, 0	60	1000	2–8
(medium galley)	(2)	(0, 125, 50, 0; 20)	(0, 25, 15, 0; 75)	(20)	(90)	(14+4)	(800/–)	(5, 10, 5)	(0, 35, 0)	(45)	(2000)	(2–10)
trireme	0	300, 300, 150, 0; 30	30, 30, 15, 0; 375	30	100	15+5	1500/–	6, 12, 6	0, 12, 0	60	1000	3–12
(medium galley)	(3)	(0, 150, 150, 0; 25)	(0, 30, 20, 0; 100)	(30)	(90)	(16+4)	(1400/–)	(5, 10, 5)	(0, 35, 0)	(55)	(2000)	(3–13)
quadrireme	0	400, 400, 200, 0; 40	40, 40, 20, 0; 500	40	100	14+6	2000/–	6, 12, 6	0, 12, 0	60	1000	4–16
(medium galley) [2]	(3)	(0, 150, 150, 0; 25)	(0, 30, 20, 0; 100)	(30)	(90)	(16+4)	(1400/–)	(5, 10, 5)	(0, 35, 0)	(55)	(2000)	(3–13)
quinquereme	0	500, 500, 250, 0; 50	50, 50, 25, 0; 625	50	100	13+7	2500/–	7, 14, 7	0, 12, 0	60	1000	5–20
(heavy galley)	(3)	(0, 350, 200, 350; 30)	(0, 40, 30, 0; 150)	(50)	(110)	(16+4)	(2000/–)	(5, 10, 5)	(0, 10, 100)	(10–72)	(5000)	(1–10)
sexireme	0	600, 600, 300, 0; 60	60, 60, 30, 0; 750	60	100	12+8	3000/–	7, 14, 7	0, 12, 0	60	1000	6–24
(heavy galley) [1]	(3)	(0, 350, 200, 350; 30)	(0, 40, 30, 0; 150)	(50)	(110)	(16+4)	(2000/–)	(5, 10, 5)	(0, 10, 100)	(10–72)	(5000)	(1–10)
septireme	0	700, 700, 350, 0; 70	70, 70, 35, 0; 875	70	100	11+9	3500/–	7, 14, 7	0, 12, 0	60	1000	7–28
(heavy galley) [1]	(3)	(0, 350, 200, 350; 30)	(0, 40, 30, 0; 150)	(50)	(110)	(16+4)	(2000/–)	(5, 10, 5)	(0, 10, 100)	(10–72)	(5000)	(1–10)
octoreme	0	800, 800, 400, 0; 80	80, 80, 40, 0; 1000	80	100	10+10	4000/–	8, 16, 8	0, 12, 0	60	1000	8–32
(juggernaut galley) [1]	(3)	(0, 350, 200, 350; 30)	(0, 50, 50, 0; 200)	(50)	(110)	(16+4)	(2000/–)	(5, 10, 5)	(0, 10, 100)	(10–72)	(5000)	(1–10)
novireme	0	900, 900, 450, 0; 90	90, 90, 45, 0; 1125	90	100	9+11	4500/–	8, 16, 8	0, 12, 0	60	1000	9–36
(juggernaut galley) [2]	(3)	(0, 350, 200, 0; 30)	(0, 50, 50, 0; 200)	(50)	(110)	(16+4)	(2000/–)	(5, 10, 5)	(0, 10, 100)	(10–72)	(5000)	(1–10)
decereme	0	1000, 1000, 500, 0; 100	100, 100, 50, 0; 1250	100	100	8+12	5000/–	8, 16, 8	0, 12, 0	60	1000	10–40
(juggernaut galley) [1]	(8)	(0, 400, 300, 350; 20)	(0, 50, 50, 0; 200)	(100)	(90)	(16+4)	(4000/–)	(5, 10, 5)	(0, 10, 100)	(10–72)	(5000)	(1–10)

NB: All ships are bribable (espionage); fishing boats and merchant ships are no longer "conquest critical".

1: A new class to which existing units are reassigned; **2**: A new class which currently remains unused

2.2.4 Siege weapons

class un/pack (ms)	pop. size	training costs (f, w, m, s; time)	loot (f, w, m, s; exp)	vision range packed/unpacked	speed	health	armour (h, p, c)	damage (h, p, c)	range (m)	rate (ms)	other stats
scorpion 6000 (5000)	1 (2)	50, 100, 100, 0; 10 (0, 250, 250, 0; 20)	5, 10, 10, 0; 125 (0, 10, 10, 0; 200)	50/100 (120)	9+3 (8+4)	125 (200)	1, 10, 1 (1, 50, 5)	0, 60, 0 (0, 180, 13)	5–90 (8–88)	3000 (4000)	– (linear splash damage removed: 0h+75p+5c)
bolt shooter 9000 (10000)	2 (2)	100, 200, 200, 0; 20 (0, 250, 250, 0; 20)	10, 20, 20, 0; 250 (0, 10, 10, 0; 200)	50/100 (120)	9+3 (8+4)	250 (200)	1, 20, 2 (1, 50, 5)	0, 120, 0 (0, 150, 25)	10–90 (8–80)	3000 (4000)	1.5× vs Elephantry (linear splash damage removed: 0h+75p+5c)
stone thrower 12000 (10000)	3 (2)	150, 300, 150, 150; 30 (0, 400, 0, 250; 25)	15, 30, 15, 15; 375 (0, 20, 0, 10; 300)	50/100 (120)	9+3 (7+3)	375 (250)	1, 30, 3 (1, 50, 5)	0, 0, 30 (0, 10, 100)	15–90 (12–80)	3000 (5000)	1.5× vs Ships circular splash damage: 0h+0p+90c (0h+15p+35c
battering ram	4 (3)	200, 400, 200, 0; 40 (0, 350, 200, 0; 30)	20, 40, 20, 0; 400 (0, 50, 25, 0; 60)	50 (80)	6+4 (8+3)	500 (400)	2, 40, 4 (1, 50, 5)	0, 0, 40 (0, 0, 150)	8 (6.5)	3000 (1500)	8.0× vs Gates, 4.0× vs other Structures garrison capacity: 10 (10)
siege tower	6 (3)	300, 750, 300, 150; 60 (0, 500, 300, 0; 60)	30, 75, 30, 15; 750 (0, 50, 25, 0; 60)	100 (80)	6+2 (6.5+3.5)	750 (500)	3, 60, 6 (1, 50, 5)	0, 10, 10 (0, 12, 2.5)	60+9 (55+9)	3000 (2000)	2.0× vs Fortifications arrow count: 2–12 (0–10) garrison capacity: 20 (20)

NB: All siege weapons are not capturable anymore.

2.2.5 Support units

class	pop. size	training costs (f, w, m, s; time)	loot (f, w, m, s; exp)	vision range	speed	health	armour (h, p, c)	build rate	other stats
female	1 (1)	50, 0, 0, 0; 8 (50, 0, 0, 0; 8)	5, 0, 0, 0; 5 (1, 1, 1, 1; 10)	50 (32)	10+5 (9.5+6.5)	40 (25)	1, 1, 1 (1, 1, 1)	1.0 (1.0)	
slave	1 (0)	50, 0, 50, 0; 8 (0, 0, 50, 0; 20)	5, 0, 5, 0; 10 (0, 1, 1, 1; 10)	50 (12)	10+5 (8+7)	50 (100)	1, 1, 1 (1, 1, 1)	1.0 (0.5)	 (unhealable, −0.25 regeneration)
healer	1 (1)	50, 0, 100, 0; 8 (250, 0, 0, 0; 8)	5, 0, 10, 0; 15 (1, 1, 1, 1; 10)	60 (30)	10+5 (9+3)	75 (85)	1, 1, 1 (1, 1, 1)	– (–)	heal 1 HP per 0.5 seconds, 12 m range (5 HP/2.0 s, 12 m)
trader	1 (1)	100, 50, 50, 0; 15 (100, 0, 80, 0; 15)	10, 5, 5, 0; 20 (1, 1, 1, 1; 10)	60 (60)	10+5 (9.5+6.5)	100 (100)	1, 1, 1 (1, 1, 1)	– (–)	bribable (bribable)
elephant	3 (1)	300, 0, 0, 0; 12 150, 0, 0, 0; 20	30, 0, 0, 0; 30 (25, 0, 0, 0; 50)	60 (50)	6+6 (5.5+4.5)	300 300	3, 6, 9 (5, 8, 10)	3.0 (2.0)	resource dropsite

NB: some support units have local auras:
female inspiration: citizen soldiers within 10 m have +10% build speed and gather rate
trader caravan: other land traders within 10 m have +1 crush, hack, and pierce armour
merchant convoy: other merchant ships within 20 m have +1 crush, hack, and pierce armour

2.3 Faction availability

2.3.1 Infantry units

	athen	brit	cart	gaul	iber	mace	maur	pers	ptol	rome	sele	spart
citizen war dog	–	–	–	–	–	–	–	–	–	–	–	–
mercenary ”	–	–	–	–	–	–	–	–	–	–	–	–
champion ”	–	V	–	–	–	–	–	–	–	–	–	–
citizen crossbowman	–	–	–	–	–	–	–	–	–	–	–	–
mercenary ”	–	–	–	–	–	–	–	–	–	–	–	–
champion ”	–	–	–	–	–	C	–	–	–	–	–	–
citizen composite bowman	–	–	V	–	–	–	–	V	–	–	–	–
mercenary ”	C	–	–	–	–	T	–	–	T	–	T	T
champion ”	C	–	–	–	–	–	–	–	–	–	–	–
citizen longbowman	–	–	–	–	–	–	V	–	–	–	–	–
mercenary ”	–	–	T	–	–	–	–	–	–	–	–	–
champion ”	–	–	–	–	–	–	E	–	–	–	–	–
citizen bullet slinger	V	–	–	–	–	–	–	–	V	–	–	–
mercenary ”	C	–	T	–	–	T	–	–	–	–	–	T
champion ”	–	–	–	–	–	–	–	–	–	–	–	–
citizen stone slinger	–	V	–	T	T	–	–	T	–	–	–	–
mercenary ”	–	–	–	–	–	–	–	–	–	–	–	–
champion ”	–	–	–	–	–	–	–	–	–	–	–	–
citizen javelinist	–	T	–	V	V	V	–	T	–	V	V	V
mercenary ”	T	–	T	–	–	T	–	–	T	–	–	T
champion ”	M	–	–	–	–	M	–	C	M	–	M	M
citizen throwing axeman	–	–	–	–	–	–	–	–	–	–	–	–
mercenary ”	–	–	–	–	–	–	–	–	–	–	–	–
champion ”	–	–	–	–	–	–	–	–	–	–	–	–
citizen axeman	–	–	–	–	–	–	–	–	–	–	–	–
mercenary ”	–	–	–	–	–	–	–	–	–	–	–	–
champion ”	–	–	–	–	–	–	–	–	–	–	–	–
citizen maceman	–	–	–	–	–	–	–	–	–	–	–	–
mercenary ”	–	–	–	–	–	–	–	–	–	–	–	–
champion ”	–	–	–	–	–	–	C	–	–	–	–	–
citizen curved swordsman	–	–	–	–	V	–	T	–	–	V	–	–
mercenary ”	–	–	–	–	–	–	–	–	–	–	–	–
champion ”	–	–	–	–	U	–	–	–	–	–	–	–
citizen longswordsman	–	–	–	–	–	–	–	–	–	–	–	–
mercenary ”	T	–	–	–	–	T	–	–	–	–	T	T
champion ”	–	U	–	–	–	–	–	–	–	–	–	–
citizen short swordsman	–	–	–	–	–	–	–	–	–	V	–	T
mercenary ”	–	–	T	–	–	–	–	–	T	–	–	–
champion ”	U	–	–	U	–	E	E	–	–	U	U	E
citizen halberdier	–	–	–	–	–	–	–	–	–	–	–	–
mercenary ”	–	–	–	–	–	–	–	–	–	–	–	–
champion ”	–	–	–	–	–	–	–	–	–	–	–	–
citizen spearman	–	V	–	V	T	–	V	V	–	T	V	–
mercenary ”	–	–	T	–	–	–	–	–	T	–	–	–
champion ”	–	E	–	T	–	C	–	C	–	–	–	–
citizen hoplite	V	–	V	–	–	–	–	–	–	–	–	V
mercenary ”	T	–	T	–	–	–	–	T	–	–	–	T
champion ”	C	–	C	–	–	C	–	C	–	–	–	C
citizen pikeman	–	–	–	–	–	V	–	–	V	–	V	–
mercenary ”	–	–	–	–	–	–	–	–	–	–	–	–
champion ”	–	–	E	–	–	–	–	–	C	–	C	E

NB: –: not available for this faction, V: requires village phase, T: requires town phase, C: requires city phase, M: requires metropolis phase, U: requires unlock champion units technology, E: exists but is unavailable.

2.3.2 Mounted units

	athen	brit	cart	gaul	iber	mace	maur	pers	ptol	rome	sele	spart
citizen archer camel	–	–	–	–	–	–	–	–	V	–	–	–
mercenary ”	–	–	–	–	–	–	–	–	–	–	–	–
champion ”	–	–	–	–	–	–	–	–	–	–	–	–
citizen spear camel	–	–	–	–	–	–	–	–	–	–	–	–
mercenary ”	–	–	–	–	–	–	–	–	–	–	–	–
champion ”	–	–	–	–	–	–	–	–	–	–	–	–
citizen crossbow cavalry	–	–	–	–	–	–	–	–	–	–	–	–
mercenary ”	–	–	–	–	–	–	–	–	–	–	–	–
champion ”	–	–	–	–	–	–	–	–	–	–	–	–
citizen archer cavalry	–	–	–	–	–	–	–	T	–	–	–	–
mercenary ”	–	–	–	–	–	–	–	–	–	–	T	–
champion ”	–	–	–	–	–	–	–	U	–	–	–	–
citizen javelin cavalry	V	V	V	V	V	–	V	V	–	T	V	V
mercenary ”	–	–	T	–	–	T	–	–	T	–	–	–
champion ”	–	–	–	–	C	–	–	–	–	–	–	–
citizen axe cavalry	–	–	–	–	–	–	–	T	–	–	–	–
mercenary ”	–	–	T	–	–	–	–	–	–	–	–	–
champion ”	–	–	–	–	–	–	–	–	–	–	–	–
citizen sword cavalry	T	T	–	T	–	–	T	–	–	–	–	–
mercenary ”	–	–	T	–	–	–	–	–	–	–	–	–
champion ”	–	–	–	–	–	–	–	–	–	E	–	–
citizen spear cavalry	–	–	–	–	T	–	T	–	–	V	–	T
mercenary ”	–	–	T	–	–	–	–	–	–	–	–	–
champion ”	–	–	U	C	–	–	–	–	–	–	–	–
citizen lance cavalry	–	–	–	–	–	V	–	–	–	–	–	–
mercenary ”	–	–	–	–	–	–	–	–	T	–	T	–
champion ”	–	–	–	–	–	C	–	U	C	–	C	–
citizen archer biga chariot	–	–	–	–	–	–	–	–	–	–	–	–
mercenary ”	–	–	–	–	–	–	–	–	–	–	–	–
champion ”	–	–	–	–	–	–	C	–	–	–	–	–
citizen javelin biga chariot	–	–	–	–	–	–	–	–	–	–	–	–
mercenary ”	–	–	–	–	–	–	–	–	–	–	–	–
champion ”	–	C	–	–	–	–	–	–	–	–	–	–
citizen three-man biga chariot	–	–	–	–	–	–	–	–	–	–	–	–
mercenary ”	–	–	–	–	–	–	–	–	–	–	–	–
champion ”	–	–	–	–	–	–	–	–	–	–	–	–
citizen scythed quadriga chariot	–	–	–	–	–	–	–	–	–	–	–	–
mercenary ”	–	–	–	–	–	–	–	–	–	–	–	–
champion ”	–	–	–	–	–	–	–	C	–	–	C	–
citizen archer elephant	–	–	–	–	–	–	T	–	–	–	–	–
mercenary ”	–	–	–	–	–	–	–	–	–	–	–	–
champion ”	–	–	–	–	–	–	–	–	–	–	–	–
citizen war elephant	–	–	–	–	–	–	T	–	–	–	–	–
mercenary ”	–	–	–	–	–	E	–	C	–	–	–	–
champion ”	–	–	C	–	–	–	C	–	C	–	C	–

NB: –: not available for this faction, V: requires village phase, T: requires town phase, C: requires city phase, M: requires metropolis phase, U: requires unlock champion units technology, E: exists but is unavailable.

2.3.3 Ships

	athen	brit	cart	gaul	iber	mace	maur	pers	ptol	rome	sele	spart
fishing boat	V	V	V	V	V	V	V	V	V	V	V	V
merchant ship	T	T	V	T	T	T	T	T	T	T	T	T
small war barge	–	–	–	–	–	–	–	–	–	–	–	–
medium war barge	–	–	–	–	–	–	T	–	–	–	–	–
large war barge	–	T	–	T	T	–	T	–	–	–	–	–
huge war barge	–	–	–	–	–	–	–	–	–	–	–	–
fireship	–	–	–	–	T	–	–	–	–	–	–	–
skiff	–	–	–	–	–	T	–	–	–	T	T	–
unireme	T	–	–	–	–	–	–	T	–	T	–	T
bireme	–	–	T	–	–	–	–	T	T	–	–	–
trireme	T	–	T	–	–	T	–	C	–	T	T	T
quadrireme	–	–	C	–	–	–	–	U	C	–	C	–
quinquereme	–	–	C	–	–	C	–	–	–	C	C	–
sexireme	–	–	–	–	–	–	–	–	C	–	–	–
septireme	–	–	–	–	–	M	–	–	–	–	–	–
octoreme	–	–	–	–	–	–	–	–	M	–	–	–
novireme	–	–	–	–	–	–	–	–	–	–	–	–
decereme	–	–	–	–	–	–	–	–	M	–	–	–

NB: –: not available for this faction, V: requires village phase, T: requires town phase, C: requires city phase, M: requires metropolis phase, U: requires unlock champion units technology, E: exists but is unavailable.

2.3.4 Siege weapons

	athen	brit	cart	gaul	iber	mace	maur	pers	ptol	rome	sele	spart
scorpion	–	–	–	–	–	–	–	–	–	C	–	–
bolt shooter	C	–	C	–	–	C	–	–	C	–	–	C
stone thrower	C	–	C	–	–	C	–	–	C	C	C	–
battering ram	T	T	T	T	T	T	T	T	T	T	T	T
siege tower	–	–	–	–	–	M	–	–	M	–	M	–

NB: –: not available for this faction, V: requires village phase, T: requires town phase, C: requires city phase, M: requires metropolis phase, U: requires unlock champion units technology, E: exists but is unavailable.

2.3.5 Support units

	athen	brit	cart	gaul	iber	mace	maur	pers	ptol	rome	sele	spart
female	V	V	V	V	V	V	V	V	V	V	V	V
slave	–	–	–	–	–	–	–	–	–	–	–	–
healer	T	T	T	T	T	T	T	T	T	T	T	T
trader	T	T	T	T	T	T	T	T	T	T	T	T
elephant	–	–	–	–	–	–	V	–	–	–	–	–

NB: –: not available for this faction, V: requires village phase, T: requires town phase, C: requires city phase, M: requires metropolis phase, U: requires unlock champion units technology, E: exists but is unavailable.

2.3.6 Heroes

	athen	brit	cart	gaul	iber	mace	maur	pers	ptol	rome	sele	spart
healer	–	–	–	–	–	–	V	–	–	–	–	–
archer infantry	–	–	–	–	–	–	–	V	V	–	–	–
javelin infantry	V	–	–	–	–	–	–	–	–	–	–	–
spear infantry	–	–	–	V	–	–	–	–	–	–	–	–
pike infantry	–	–	–	–	–	E	–	–	–	–	–	–
hoplite infantry	V	–	–	–	–	–	–	–	–	–	–	V/V
sword infantry	V	V/E/E	–	V	V/V	V/E	–	–	–	–	–	V
sword cavalry	–	V	V	V	–	V	–	–	V	V/V/V	V	–
spear cavalry	–	–	V	–	V	V/E	–	V	–	–	V	–
javelin chariot	–	V	–	–	–	–	–	–	–	–	–	–
archer chariot	–	–	–	–	–	–	V	V/E	–	–	–	–
war elephant	–	–	V	–	–	–	V	–	V	–	V	–

NB: –: not available for this faction, V: requires village phase, T: requires town phase, C: requires city phase, M: requires metropolis phase, U: requires unlock champion units technology, E: exists but is unavailable.

2.4 Historical reality

2.4.1 Melee infantry

Warfare in Antiquity was often very lopsided: both sides would field heavy infantry formations against each other, until one side believed they were losing the fight, broke down, and fled; the losers would be massacred in pursuit, while the victors would win with relatively minimal casualties. Population potential generally determined the outcome of prolonged warfare: ever expanding states who could afford to lose battles (e.g. Macedon, Rome) won wars; those with stagnant growth (e.g. most Hellenistic kingdoms) often preferred to avoid all-or-nothing pitched fights and rely on naval warfare and sieges instead.

Hoplites wore a large circular shield (the *aspis*), a helmet, and a heavy, metal body armour; their primary weapon was a spear; often they also had a short sword or dagger as a secondary weapon. Hoplites were the dominant warriors of the Archaic and Classical periods. They were citizens who seldom fought more than a couple of days per year; even untrained they could easily hold their own against any opponent, thanks to their heavy armaments. The Persians often recruited large contingents of Greek mercenary hoplites; in the fourth century they even set up a corps of their own to emulate them. Their great strength was simultaneously their weakness: hoplite armour was very expensive, limiting the numbers of available troops (in city states soldiers had to provide their own weapons); inflexible, limiting their movement and speed on the battlefield; and uncomfortable, very hot in broad sunlight: hoplites would often march unarmed and only get their armour on (with the help of a servant) shortly before the actual fighting started.

Several experiments (e.g. Iphicrates) to make hoplites lighter culminated in the fourth century into the Macedonian pikemen (*phalangites*). They had long (c. 6 m) pikes (the *sarissa*), which required two hands to handle, small, crescent shaped shields (the *peltê*) attached to one arm, and often little more than a linen body armour. Although vulnerable on their own, they were invulnerable to frontal attacks when packed in their very tight (and slow) formations (unlike hoplites and swordsmen, who fought in relatively loose formations to allow moving around their weapons and falling back to ranks behind them). Soldiers were no longer independent citizens, but subjects who served for months or years and dependent on their king. The king provided them with armaments beforehand, regular meals and pay in service, and land afterwards; this allowed Macedon to quickly recruit and replace large numbers of heavy infantry. Being regular soldiers they had plenty of time to be trained, especially at forced marches; the ability to move around armies much quicker than opponents expected facilitated Alexander's world conquest.

As a result of the Celtic (Galatian) invasions of the Balkans, Greece, and Asia and directly inspired by their infantry a new, more flexible type of infantry emerged in the Greek world. Armed with a large oval shields (the *thureos*), some body armour, and short spears of various lengths and thicknesses, *thureophoroi* (medium infantry) could act both as skirmishers (light infantry), hurling javelins, and as *phalangites* (heavy infantry), forming a shieldwall and holdings its ground with their thrusting spears.

In Italy, hoplite-style infantry remained in use by all peoples (Greeks, Oscans (Samnites), Umbrians (Sabines), Latins (Romans), Etruscans); a short stabbing sword (*gladius*) gradually replaced the spear (*hasta*) as the primary weapon; circular (e.g. the *clipeus*), oval, and rectangular (e.g. the *scutum*) shields were used concurrently; and the *phalanx* was abandoned in favour of similar but looser formations.

2.4.2 Ranged infantry

Standing at a relatively safe distance and hurling javelins at the opponents has been the typical form of tribal warfare throughout history everywhere in the world, from Neolithic times to 20th century Amazon, Africa, and Papua New Guinea; after a few men were wounded, one side would retreat. Although often dismissed as childlike, actually the combination of participation of the entire male population, several fights a year, and lack of modern medicine to prevent minor wounds from developing into dangerous infections, effectively results in something relatively more lethal than the Second World War was.

In Antiquity, light infantry was primarily used for harrassing the enemy and other auxiliary roles. Ranged infantry was notably ineffective against heavy infantry formations; their missiles were merely a nuisance, not really deadly at all. Only when the formation broke could they kill off their opponents.

Thracian style peltasts, armed with a light, crescent shaped, goatskin shield (*peltê*), two javelins (*akontia*), and a short slashing sword as a secondary weapon, were the skirmishers *par excellence* in Classical Greece; quick and agile, they excelled at ambushing and occupying, defending, or assaulting important points; unlike other light units they could fight in melee, if necessary. Although easily chased away by infantry charges or cavalry on flat terrain, they could hold their own on rough terrain (most of Armenia and Greece) and occasionally massacre cavalry or even hoplites. Their effectiveness, relatively cheapness of equipment (especially when compared to hoplites), and easy skills (hurling javelins can be learned in a day) resulted in them being the most common and popular mercenary type.

Archery has been practiced since prehistoric times to the present day. Archers have to be subdivided into three categories, depending on the type of bow.

Simple, self, flat, or longbows are basically long wooden sticks (up to 2 m) to which a bowstring is attached; they are cheap and easy to produce; many types of wood can be used, although yew (*taxus*) seems to have been preferred in Europe and bamboo in South, Southeast, and East Asia; using them requires great strength, practice, and experience.

Composite bows were invented in the late third or second millenium and could be curved or recurved; they were neither cheap nor durable: manufactured by laminating layers of horn, sinew, and wood sinew, a difficult and time consuming process, and sensitive to moisture (which explains why they never became common in Europe). Using composite bows required years of experience and significantly more skill than shooting a simple bow. The great advantage was their strength, being much shorter but at least as powerful as longbows. Composite bows were *the* weapon of choice for charioteers and horse archers, and also used by (As)syrian, Indo-Iranian (e.g. Vedic (Indic) Aryans, Medes, Parthians, Persians, Scythians, etc.), Hunnic, Turkic, and Mongol foot archers. Massed foot archers were the most effective counter against cavalry archers: they could shoot standing, sitting, hiding in the bushes, making them small targets, and from there rain down arrows on the horses, who were much smaller targets.

Composite bows existed in Mycenean Greece, but disappeared in the Dark Ages; the archery tradition was continued in Crete and from there reintroduced to mainland Greece in the Classical times. Although Scythian and other mercenary archers were used, the Cretans were the most famous and desired archers; so great was their fame and skill that occassionally "Cretan" was used as a general Greek term for "archer" (likewise "Syrian" could be used as a general Latin term for "archer" in Imperial Roman sources).

Composite bows had an effective range of about 60 metres against individuals and over 150 metres against formations; maximum (inaccurate) range might occassionally exceed 300 metres, depending on the terrain, weather, bow, and archer. It is important to realize arrows could not penetrate body armour or heavy shields; furthermore, even hoplites could cover the effective range distance in only seconds on flat terrain.

Crossbows were invented independently in China and in the Greek world in the fifth century at the latest; the Chinese version later led to the invention of repeated crossbows, the Greek version to the ballista, catapult, and similar forms of artillery, first constructed in Syracusae in the early fourth century, and spreading from there. Strictly speaking crossbowmen are not true archers, since they do not shoot arrows, but much shorter and heavier bolts or stones instead. Greek hand-held crossbows (*gastraphetes* "belly-releaser") were only used in siege warfare. Unlike traditional archery, skillfully using a crossbow could be learned in a week or two (which explains their popularity in the European Middle Ages (A.D.)); their much lower rate of fire (a skilled archer could perhaps launch up to a dozen arrows in the time a crossbowman required to reload and shoot once) was not really an issue during sieges.

Slinging is a skill now lost, which makes it difficult for people nowadays to get a clear idea of its effectiveness. However, Greek sources repeatedly stress that slingers had an effective range of over 200 metres and could easily outdistance and outshoot archers.

Slings were used everywhere in the Mediterranean from Neolithic times to Late Antiquity; however, it was generally the least prestigious weapon (hoplites, chariots, javelins, and archers all feature prominently in Homer's *Iliad*; slings do not appear); a sling was an extremely cheap weapon, everyone could afford it; slingers were usually of low status, very poor, and considered rustic. Of course, there are always exceptions: the Balearic peoples, Acarnanians, Rhodians, and Judaeans were all famous for their exceptional slinging skills (boys practised from early childhood), they were proud of it, and sought after as mercenaries.

Slingers could use various forms of ammunition. Everything from fist-sized rocks of up to 500 grammes to small pebbles as light as 50 grammes could be used, rough ones picked up at the battlefield or more effective smooth stones collected in advance in river beds; Celtic hill horts with stocks of tens of thousands of sling stones are not uncommon archaeological sites in Northwestern Europe. Clay projectiles of various sizes first appear in Early Bronze Age Mesopotamia and were still produced in the Roman Empire. Small leaden bullets (of 20 to 50 grammes) were produced by Assyrians, Greeks, Romans, and others; they had the greatest range and penetrative power and were very hard to see or dodge; they were ineffective against full hoplite armour but dangerous for everyone with lighter protection.

Massed slingers, although not packed as closely as foot archers (because their slings needed space for swinging) could rain down projectiles on heavy infantry formations, forcing them to stay put, hiding behind their shields for cover. Small groups of slingers were used to chase away other slingers or archers, who lacked shields and body armour and were thus always vulnerable to projectiles.

2.4.3 Chariotry

The first clear evidence of animals in warfare were the donkey carts used by the Sumerians; these were undoubtedly slow, but given that everyone else was on foot, this was not a problem.

Horses were domesticated and (spoked-wheel) chariots invented in what is now Ukraine and Southern Russia; from there they were spread by the Indo-Europeans ("Aryans") throughout Eurasia, to China in the East, the British isles in the West, and Egypt in the South; the horse-and-chariot was very fast and dominated battlefields everywhere: it was the "fighter jet" of the Bronze Age.

In the Hellenistic period there were many attempts to (re)introduce scythed chariots, but these remained ultimately unsuccessful.

2.4.4 Camelry

Dromedary camels were domesticated by the Bedouin ("Arab") tribes living in and around the Syrian desert; due to their long legs dromedary camels could easily outrun horses, making them very suitable for hit-and-run raids. The primary usage of dromedary camels, however, was maintaining supply lines and caravans in desert areas (as is still the case in the present day).

2.4.5 Cavalry

The first evidence of cavalry appeared relatively late, in the Neo-Assyrian Empire; it was apparently an evolution from earlier chariot experiments; chariot crews consisted of a driver and an archer or lancer; likewise, Assyrian cavalry was organized in teams of two: one would manage the reins of both horses, the other was an armed warrior who did the fighting.

Horseback-riding existed in Greece in the Dark Ages; however, such soldiers were actually mounted infantry rather than true cavalry: they would ride to the battlefield but descent and fight on foot when the battle started. The situation in most of Europe was probably comparable; sources implicate that during the Second Punic War it was still common for Roman horsemen to descent and fight on foot. Mounted infantry and true cavalry probably coexisted for many centuries (cf. the mounted pikemen and dragoons of the Early Modern Period (post 1500 A.D.)).

The first true cavalry (men who actually fought from horseback) in the Greek world was Thessalian, starting in the eight century; the Boeotians were also famous for their cavalry. Cavalry could be armed with throwing javelins, thrusting spears, or both, and often had a short slashing sword as a secondary weapon. Bow-and-arrows could apparently be used as well: Athens had a regular corps of 200 horse archers in 431. The lance was introduced by the Macedonians in the fourth century; Alexander seems to be the first to have used cavalry as shock troops.

The Indo-Iranian tribes (e.g. Vedic (Indic) Aryans, Medes, Parthians, Persians, Scythians, etc.) fought from horseback many centuries before: whenever they appear in historical records, they are already known and feared for their exceptional riding skills and usage of bow-and-arrow from horseback. Horse archers dominated Central Eurasian warfare until the introduction of modern rifles and cannons. They were usually light, fast, unarmoured, and could have multiple horses to be able to continue constant attacks. Much slower armoured heavy (and cataphract) horse archers (who were nearly invulnerable to arrows) developed as a counter against them and coexisted for centuries.

It is important to realize that horses throughout Antiquity were actually quite small, about the size of a pony or Przewalski's horse. Larger breeds (Nisean horses) started in the fifth century (B.C.) but remained exceptional until the European Middle Ages (A.D.).

Horses did not like the smell of camels nor the noise of chariot wheels: unused to it, they would panic at the first encounter, but could be trained to resist their unease (cf. fireworks).

2.4.6 Elephantry

Wild elephants were captured and tamed (but never domesticated) in the Indus valley as early as the fifth milennium; they were used in agriculture and as beasts of burden. An independent elephant tradition might have existed in Shang China (second milennium). True war elephants emerged in Indian warfare only in the first milennium, probably from Ceylon (Sri Lanka): the *mahout*[2] tradition seemed to have originated here. (Elephants were still the primary export product from Ceylon to India in the Early Modern Period when the Dutch East India Company (VOC) tried to monopolize all trades to and from Ceylon.)

Elephants were *not* living siege weapons.[3] Elephantry had many functions: prestige, intimidation, high and relatively safe look-out posts for generals, platforms for archers to shoot arrows from (walking towers), and protecting vulnerable infantry against cavalry charges and horse archers (horses won't charge directly at elephants and arrows had little to none effect against war elephants); direct elephant charges at infantry formations were risky and rare.

The Indian states, the Persians, Alexander, and the Seleucids all used Asian elephants (*Elephas maximus*): Sri Lankan elephants (*E. m. maximus*) were evidently the archetypical war elephants everywhere; Indian elephants (*E. m. indicus*) were probably used in large numbers as well; Syrian elephants (*E. m. asurus*), the largest in size, were occassionally also used, but their population was quite small due to habitat loss and became totally extinct by the first century.

Ptolemaic Egypt, Epirus, Carthage, Numidia, and Kush used North African elephants (now extinct) instead; they were easier and cheaper to acquire for them than the more prestigious Asian elephants; however, all sources agree they were significantly smaller and inferior; the Seleucid war elephants easily defeated their Ptolemaic counterparts whenever they met.

[2] Mahouts are the men who tamed, trained, cared for, and rode war elephants

[3] Have you have ever seen an elephant charging head on at a large stone wall? Exactly!

2.5 New template structure tree

Located in `/simulation/templates/`; existing (overruled) templates are indicated with an asterisk (*).

```
template_unit.xml*

template_unit_camel.xml
template_unit_camel_melee.xml
template_unit_camel_melee_spear.xml
template_unit_camel_melee_spear_champion.xml
template_unit_camel_melee_spear_mercenary.xml
template_unit_camel_ranged.xml
template_unit_camel_ranged_archer.xml
template_unit_camel_ranged_archer_champion.xml
template_unit_camel_ranged_archer_mercenary.xml

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template_unit_cavalry_ranged_javelin_mercenary.xml

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template_unit_chariot_biga_javelin.xml
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template_unit_chariot_biga_three_mercenary.xml
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```

3 Structures

Principles

Centres: cavalry, camels, and worker elephants can no longer be trained at centres or crannogs.

Espionage: civic structures, centres, crannogs, docks, embassies, harbours, markets, palaces, and wonders are bribable (as are all ships, traders, and heroes).

Experience: loot experience is 10% of maximum health for centres, crannogs, and fortications (fortresses, outposts, sentry towers, stone towers, wall turrets), 0 for other structures.

Loot: loot resources are standardized to 10% of resource costs (all structures).

Territory: army camps, centres, crannogs, docks, harbours, shipyards, and outposts can be constructed in neutral territory (*unchanged*), as can corrals, farmsteads, fields, markets, storehouses, and walls (*new*; keep in mind control is quickly lost if left on their own).
Centres, fortresses, harbours, monuments and pillars, palaces, and wonders have a territory root.

Unavailable: colonies, council chambers, embassies, Ishtar gate, and royal stoas are disabled.

Upgradable: (any): a long wall to gate; (town): an outpost to sentry tower; (city): a sentry tower to stone tower.

3.1 Faction availability

	athen	brit	cart	gaul	iber	mace	maur	pers	ptol	rome	sele	spart
centre	V	V	V	V	V	V	V	V	V	V	V	V
house	–	V	–	V	V	–	V	–	V	–	–	–
big house	V	–	V	–	–	V	–	V	–	V	V	V
storehouse	V	V	V	V	V	V	V	V	V	V	V	V
farmstead	V	V	V	V	V	V	V	V	V	V	V	V
farm field	V	V	V	V	V	V	V	V	V	V	V	V
corral	V	V	V	V	V	V	V	V	V	V	V	V
docks	V	V	V	V	V	V	V	V	V	V	V	V
market	T	T	T	T	T	T	T	T	T	T	T	T
blacksmith	V (T)	V (T)	V (T)	V (T)	V (T)	V (T)	V (T)	V (T)	V (T)	V (T)	V (T)	V (T)
temple	T	T	T	T	T	T	T	T	T	T	T	T
rotary mill	–	T (C)	–	T (C)	–	–	–	–	–	–	–	–
dog kennels	–	V (T)	–	–	–	–	–	–	–	–	–	–
infantry barracks	V	V	V	V	V	V	V	V	V	V	V	V
cavalry stables	V (–)	V (–)	V (–)	V (–)	V (–)	V (–)	V (–)	V	V (–)	V (–)	V (–)	V (–)
elephant stables	–	–	C (–)	–	–	–	V (T)	C (–)	C (–)	–	C (–)	–
military hall	C	–	C (–)	T	–	C (–)	C (–)	C	C (–)	–	C (–)	C
siege workshop	T (–)	T (–)	T (–)	T (–)	T (–)	T (C)	T (–)	T (–)	T (–)	T (–)	T (–)	T (–)
shipyard	T (–)	–	T (–)	–	–	T (–)	–	T (–)	T (–)	T (–)	T (–)	T (–)
village palisade	V	V	V	V	V	V	V	V	V	V (–)	V	V
town turf walls	T (–)	T (–)	T (–)	T (–)	T (–)	T (–)	T (–)	T (–)	T (–)	T (C)	T (–)	T (–)
city stone walls	C (T)	C (T)	C (T)	C (T)	C (T)	C (T)	C (T)	C (T)	C (T)	C (T)	C (T)	C (–)
outpost	V	V	V	V	V	V	V	V	V	V	V	V
sentry tower	T (V)	T (V)	T (V)	T (V)	T (V)	T (V)	T (V)	T (V)	T (V)	T (V)	T (V)	T (V)
stone tower	C (T)	C (T)	C (T)	C (T)	C (T)	C (T)	C (T)	C (T)	C (T)	C (T)	C (T)	C (T)
fortress	C	C	C	C	C	C	C	C	C	C	C	C
army camp	–	–	–	–	–	–	–	–	–	C	–	–
crannog	–	T	–	–	–	–	–	–	–	–	–	–
harbour	–	–	C (T)	–	–	–	–	–	–	–	–	–
library	–	–	–	–	–	M (C)	–	–	M (C)	–	M (C)	–
lighthouse	–	–	–	–	–	–	–	–	M (T)	–	–	–
monument/pillar	–	–	–	–	T (C)	–	T (C)*	–	–	–	–	–
palace	–	–	–	–	–	–	C (–)	C	–	–	–	–
theatre	C	–	–	–	–	C	–	–	C (–)	–	C (–)	– (C)
Vestal temple	–	–	–	–	–	–	–	–	–	C (T)	–	–
wonder	C	C	C	C	C	C	C	C	C	C	C	C

NB: The new values are displayed normally, the default "0 A.D. Alpha XXII: Venustas" values are displayed for comparison between brackets (). **NB**: –: not available for this faction, V: requires village phase, T: requires town phase, C: requires city phase, M: requires metropolis phase, U: requires unlock champion units technology, E: exists but is unavailable.

3.2 Comparison table (structures)

class	phase	default costs (f, w, m, s; time)	loot (f, w, m, s; exp)	in neutral territory	territory root/ radius/weight	pop. bonus	garrison capacity	health/ capture	armour (h, p, c)	vision range
centre, crannog	V	500, 500, 500, 500; 600	50, 50, 50, 50; 300	yes	1/150/10000	25	25	3000/3000	25, 35, 3	100
		(0, 500, 500, 500; 500)	(0, 200, 200, 200; 200)		(1/140/10000)	(20)	(20)	(3000/2500)	(25, 35, 3)	(90)
army camp	C	100, 600, 100, 0; 240	10, 60, 10, 0; 240	yes	–	8	40	2400/1600	15, 25, 2	80
		(0, 500, 200, 0; 250)	(0, 100, 0, 0; 100)		–	(5)	(40)	(2500/1500)	(15, 25, 2)	(60)
barracks	V	100, 300, 0, 100; 200	10, 30, 0, 10; 0	no	0/40/40000	0	10	2000/500	20, 35, 3	40
		(0, 300, 0, 0; 150)	(0, 30, 0, 10; 0)		(0/50/40000)	(0)	(10)	(2000/500)	(20, 35, 3)	(32)
economic dock	V	50, 200, 0, 0; 150	5, 20, 0, 0; 0	yes	–	5	0	2500/500	20, 35, 3	50
		(0, 200, 0, 0; 150)	(30, 30, 0, 0; 0)			(5)	(0)	(2500/500)	(20, 35, 3)	(40)
military shipyard	T (V)	50, 200, 50, 0; 150	5, 20, 0, 0; 0	yes	–	5	0	2500/500	20, 35, 3	50
		(0, 200, 0, 0; 150)	(30, 30, 0, 0; 0)			(5)	(0)	(2500/500)	(20, 35, 3)	(40)
harbour (super dock)	C (T)	200, 400, 200, 200; 500	20, 40, 20, 20; 0	yes	1/200/25000	10	25	5000/2500	20, 40, 5	100
		(0, 300, 0, 200; 500)	(0, 75, 0, 50; 0)		(1/200/25000)	(10)	(5)	(5000/2000)	(20, 35, 3)	(100)
outpost tower	V	0, 75, 0, 0; 50	0, 8, 0, 0; 0	yes	–	0	1	750/500	5, 20, 1	100
		(0, 80, 0, 0; 40)	(0, 8, 0, 0; 100)			(0)	(1)	(800/500)	(5, 20, 1)	(80)
sentry tower	T (V)	50, 100, 0, 50; 100	5, 10, 0, 5; 0	no	0/20/20000	0	3	1000/750	15, 25, 2	100
		(0, 100, 0, 0; 40)	(0, 20, 0, 0; 100)		(0/16/30000)	(0)	(3)	(250/800)	(20, 25, 1)	(80)
stone tower	C (T)	50, 150, 0, 100; 150	5, 15, 0, 10; 0	no	0/30/30000	0	5	1500/1000	25, 30, 3	20
		(0, 100, 0, 100; 150)	(0, 0, 0, 20; 100)		(0/32/30000)	(0)	(5)	(1000/500)	(25, 30, 3)	(20)
fortress	C	200, 400, 100, 800; 450	20, 40, 10, 80; 600	no	0/100/40000	20	30	6000/4500	25, 35, 5	100
		(0, 0, 0, 1000; 500)	(0, 0, 0, 65; 100)		(0/100/40000)	(20)	(20)	(4200/4000)	(25, 40, 6)	(80)
wall short	C (T)	0, 15, 0, 45; 30	0, 2, 0, 5; 0	yes	–	0	1	1500/2000	25, 35, 5	20
		(0, 0, 0, 15; 15)	(0, 0, 0, 15; 100)	(no)	(0/20/65535)	(0)	(0)	(1000/1200)	(25, 30, 3)	(20)
wall medium	C (T)	0, 30, 0, 90; 60	0, 3, 0, 9; 0	yes	–	0	3	3000/2000	25, 35, 5	20
		(0, 0, 0, 22; 30)	(0, 0, 0, 15; 100)	(no)	(0/20/65535)	(0)	(3)	(2000/1200)	(25, 30, 3)	(20)
wall long	C (T)	0, 45, 0, 135; 90	0, 5, 0, 14; 0	yes	–	0	5	4500/2000	25, 35, 5	20
		(0, 0, 0, 28; 45)	(0, 0, 0, 15; 100)	(no)	(0/20/65535)	(0)	(5)	(3000/1200)	(25, 30, 3)	(20)
wall gate	C (T)	0, 40, 40, 0; 15	0, 8, 4, 8; 0	yes	–	0	0	5000/2000	20, 30, 3	20
		(0, 0, 0, 60; 10)	(0, 0, 0, 15; 100)	(no)	(0/20/65535)	(0)	(0)	(3000/1200)	(25, 30, 3)	(20)
wall turret	C (T)	0, 50, 0, 150; 100	0, 5, 0, 15; 0	yes	–	0	2	5000/2000	25, 35, 5	60
		(0, 0, 0, 90; 80)	(0, 0, 0, 15; 100)	(no)	(0/20/65535)	(0)	(2)	(4000/1200)	(25, 30, 3)	(60)
library	C	250, 250, 250, 250; 500	25, 25, 25, 25; 0	no	0/50/50000	0	25	2500/500	20, 30, 3	50
		(0, 0, 200, 200; 200)	(0, 0, 125, 125; 0)		(0/50/40000)	(0)	(5)	(2000/500)	(20, 30, 3)	(40)
theatre	C	400, 400, 400, 800; 500	40, 40, 40, 80; 0	no	0/100/50000	0	50	4000/2000	20, 30, 3	100
		(0, 0, 500, 500; 500)	(0, 0, 125, 125; 0)		(0/100/40000)	(0)	(5)	(2000/500)	(20, 30, 3)	(40)
wonder	C	1000, 1000, 1000, 1000; 1000	100, 100, 100, 100; 0	no	1/100/60000	0	50	5000/2500	15, 25, 3	100
		(1000, 1000, 1000, 1000; 1000)	(300, 300, 300, 300; 300)		(1/100/65535)	(0)	(30)	(5000/2000)	(15, 25, 3)	(72)

4 Technologies

The new values are displayed on each first row, the default "0 A.D. Alpha XXII: Venustas" values are displayed for comparison on each second row (between brackets); some files are renamed for internal consistency. All technology files are located in `/simulation/data/technologies/`

4.1 Comparison table (armoury)

technology	**cost** (f, w, m, s; time)	**phase**	**effects**
`armour_cavalry_1.json`	0, 800, 400, 0; 40	village	cavalry +1 crush, hack, and pierce armour;
(`armor_cavalry_01.json`)	(0, 1000, 350, 0; 40)	(town)	−1% walk speed (+0/ + 1/ + 1; –)
`armour_cavalry_2.json`	0, 1000, 500, 0; 50	town	cavalry +1 crush, hack, and pierce armour;
(`armor_cavalry_02.json`)	(0, 1000, 450, 0; 40)	(city)	−1% walk speed (+0/ + 1/ + 1; –)
`armour_cavalry_3.json`	0, 1200, 600, 0; 60	city	cavalry +1 crush, hack, and pierce armour;
[new]	*[new]*	*[new]*	*[new]*
`armour_female.json`	100, 100, 0, 0; 40	village	females +1 crush, hack, and pierce armour;
(`health_females_01.json`)	(150, 0, 0, 0; 40)		(females +50% health)
`armour_hero.json`	0, 250, 500, 0; 60	city	heroes +3 crush, hack, and pierce armour;
(`armor_hero_01.json`)	(0, 0, 600, 0; 40)		(+0/ + 2/ + 2; +50 metal cost)
`armour_infantry_1.json`	0, 800, 400, 0; 40	village	infantry +1 crush, hack, and pierce armour;
(`armor_infantry_01.json`)	(0, 1000, 350, 0; 40)	(town)	−1% walk speed (+0/ + 1/ + 1; –)
`armour_infantry_2.json`	0, 1000, 500, 0; 50	town	infantry +1 crush, hack, and pierce armour;
(`armor_infantry_02.json`)	(0, 1000, 450, 0; 40)	(city)	−1% walk speed (+0/ + 1/ + 1; –)
`armour_infantry_3.json`	0, 1200, 600, 0; 60	city	infantry +1 crush, hack, and pierce armour;
[new]	*[new]*	*[new]*	*[new]*
`armour_ship_1.json`	0, 400, 0, 0; 40	village	ships +2 crush, hack, and pierce armour;
(`armor_ship_reinforcedhull.json`)	(0, 250, 0, 0; 40)		−2% walk speed (+2/ + 2/ + 2; –)
`armour_ship_2.json`	0, 400, 400, 0; 40	town	ships +2 crush, hack, and pierce armour;
(`armor_ship_hypozomata.json`)	(0, 150, 150, 0; 40)		−2% walk speed (+2/ + 2/ + 2; –)
`armour_ship_3.json`	0, 400, 800, 0; 60	city	ships +2 crush, hack, and pierce armour;
(`armor_ship_hullsheating.json`)	(0, 0, 350, 0; 40)		−2% walk speed (+2/ + 2/ + 2; –)
`armour_trader.json`	0, 200, 200, 0; 60	city	traders +2 crush, hack, and pierce armour
(`trade_convoys_armor.json`)	(0, 0, 200, 0; 40)		−2% walk speed (+0/ + 2/ + 2; –)
`attack_cavalry_melee_1`	400, 400, 400, 0; 40	village	melee cavalry +15% attack
(`attack_cavalry_melee_01`)	(500, 750, 350, 0; 40)	(town)	(+20%)
`attack_cavalry_melee_2`	500, 500, 500, 0; 50	town	melee cavalry +15% attack
(`attack_cavalry_melee_02`)	(500, 500, 500, 0; 40)	(city)	(+20%)
`attack_cavalry_melee_3`	600, 600, 600, 0; 40	city	melee cavalry +15% attack
[new]	*[new]*	*[new]*	*[new]*
`attack_cavalry_ranged_1`	400, 400, 400, 0; 40	village	ranged cavalry +15% attack
(`attack_cavalry_ranged_01`)	(500, 750, 350, 0; 40)	(town)	(+20%)
`attack_cavalry_ranged_2`	500, 500, 500, 0; 50	town	ranged cavalry +15% attack
(`attack_cavalry_ranged_02`)	(500, 500, 500, 0; 40)	(city)	(+20%)
`attack_cavalry_ranged_3`	600, 600, 600, 0; 60	city	ranged cavalry +15% attack
[new]	*[new]*	*[new]*	*[new]*
`attack_champions_elite.json`	0, 0, 300, 0; 40	city	melee champions +2 hack melee attack,
	(0, 0, 300, 0; 40)		ranged champions +2 pierce ranged attack
`attack_infantry_melee_1`	400, 400, 400, 0; 40	village	melee infantry +15% attack
(`attack_infantry_melee_01`)	(500, 500, 250, 250; 40)	(town)	(+20%)
`attack_infantry_melee_2`	500, 500, 500, 0; 50	town	melee infantry +15% attack
(`attack_infantry_melee_02`)	(500, 500, 250, 450; 40)	(city)	(+20%)
`attack_infantry_melee_3`	600, 600, 600, 0; 60	city	melee infantry +15% attack
[new]	*[new]*	*[new]*	*[new]*
`attack_infantry_ranged_1`	400, 400, 400, 0; 40	village	ranged infantry +15% attack
(`attack_infantry_ranged_01`)	(500, 500, 250, 250; 40)	(town)	(+20%)
`attack_infantry_ranged_2`	500, 500, 500, 0; 50	town	ranged infantry +15% attack
(`attack_infantry_ranged_02`)	(500, 500, 250, 350; 40)	(city)	(+20%)
`attack_infantry_ranged_3`	600, 600, 600, 0; 60	city	ranged infantry +15% attack
[new]	*[new]*	*[new]*	*[new]*
`attack_soldiers_will.json`	1500, 1500, 1500, 1500; 90	city	units and structures +15% attack
	(1500, 1500, 1500, 1500; 40)		(soldiers +25% attack)

4.2 Comparison table (economic)

technology	**cost** (f, w, m, s; time)	**phase**	**effects**
gather_animals_stockbreeding.json	100, 0, 0, 0; 40 (50, 0, 0, 0; 40)	village	domestic animals −25% breed time
gather_capacity_1.json (gather_capacity_basket.json)	250, 250, 0, 0; 40 (300, 300, 0, 0; 40)	village	workers +5 resource carrying capacity
gather_capacity_2.json (gather_capacity_wheelbarrow.json)	500, 500, 0, 0; 50 (500, 500, 0, 0; 40)	town	workers +5 resource carrying capacity
gather_capacity_3.json (gather_capacity_carts.json)	1000, 1000, 0, 0; 60 (1000, 1000, 0, 0; 40)	city	workers +5 resource carrying capacity (+10)
gather_capacity_boat.json (gather_capacity_fishing.json)	200, 100, 0, 0; 50 (200, 100, 0, 0; 30)	town	fishing boats +25.0 food carrying capacity (+20.0)
gather_farm_1.json (gather_farming_plows.json)	0, 200, 100, 0; 40 (0, 200, 100, 0; 40)	village	workers +25% food.grain farming rate (+15%)
gather_farm_2.json (gather_farming_training.json)	0, 400, 200, 0; 50 (0, 300, 150, 0; 40)	town	workers +20% food.grain farming rate (+15%)
gather_farm_3.json (gather_farming_fertilizer.json)	0, 600, 300, 0; 60 (0, 500, 250, 0; 40)	city	workers +15% food.grain farming rate (+25%)
gather_farm_4.json *[new]*	0, 800, 400, 0; 70 *[new]*	metropolis *[new]*	workers +10% food.grain farming rate *[new]*
gather_fish.json (gather_fishing_net.json)	0, 100, 0, 0; 40 (0, 100, 0, 0; 30)	village	workers +30% food.fish fishing rate (fishing boats +30%)
gather_forage.json (gather_wicker_baskets.json)	0, 100, 0, 0; 30 (0, 100, 0, 0; 40)	village	workers +50% food.fruit foraging rate, +5 food carrying capacity (+50%; 0)
gather_metal_1.json (gather_mining_wedgemallet.json)	125, 125, 50, 0; 40 (0, 200, 50, 0; 40)	village	workers +20% metal.ore mining rate (+15%)
gather_metal_2.json (gather_mining_shaftmining.json)	250, 250, 100, 0; 50 (0, 250, 50, 0; 40)	town	workers +25% metal.ore mining rate (+15%)
gather_metal_3.json (gather_mining_silvermining.json)	500, 500, 200, 0; 60 (0, 1000, 150, 150; 40)	city	workers +30% metal.ore mining rate (+50%)
gather_stone_1.json (gather_mining_servants.json)	125, 125, 50, 0; 40 (0, 200, 50, 0; 40)	village	workers +20% stone.rock quarrying rate (+15%)
gather_stone_2.json (gather_mining_serfs.json)	250, 250, 100, 0; 50 (0, 250, 50, 0; 40)	town	workers +25% stone.rock quarrying rate (+15%)
gather_stone_3.json (gather_mining_slaves.json)	500, 500, 200, 0; 60 (0, 1000, 150, 150; 40)	city	workers +30% stone.rock quarrying rate (+50%)
gather_wood_1.json (gather_lumbering_ironaxes.json)	125, 125, 50, 0; 40 (0, 200, 50, 0; 40)	village	workers +20% wood.tree lumbering rate (+15%)
gather_wood_2.json (gather_lumbering_strongeraxes.json)	250, 250, 100, 0; 50 (0, 250, 50, 0; 40)	town	workers +25% wood.tree lumbering rate (+15%)
gather_wood_3.json (gather_lumbering_sharpaxes.json)	500, 500, 200, 0; 60 (0, 1000, 150, 150; 40)	city	workers +30% wood.tree lumbering rate (+50%)
speed_horse_1 (speed_cavalry_01)	300, 0, 100, 0; 40 (500, 500, 150, 0; 40)	village (town)	cavalry and chariots +5% walk speed (cavalry +10%)
speed_horse_2 (speed_cavalry_02)	450, 0, 150, 0; 50 (500, 500, 150, 0; 40)	town (city)	cavalry and chariots +5% walk speed (cavalry +10%)
speed_horse_3 *[new]*	600, 0, 200, 0; 60 *[new]*	city *[new]*	cavalry and chariots +5% walk speed *[new]*
speed_trader.json (trade_convoys_speed.json)	200, 0, 200, 0; 50 (0, 0, 200, 0; 40)	town	traders +10% walk speed (+25%)
trade_gain_1.json (trade_gain_01.json)	100, 100, 100, 0; 40 (0, 150, 150, 0; 40)	village (town)	traders +5% gain
trade_gain_2.json (trade_gain_02.json)	200, 200, 200, 0; 50 (0, 300, 300, 0; 40)	town (city)	traders +10% gain
trade_gain_3 *[new]*	300, 300, 300, 0; 60 *[new]*	city *[new]*	traders +15% gain *[new]*
trade_international.json (trade_commercial_treaty.json)	0, 0, 300, 0; 60 (0, 0, 100, 0; 40)	city (town)	markets +0.1 [i.e. +10%] international bonus

4.3 Comparison table (healing)

technology	**cost** (f, w, m, s; time)	**phase**	**effects**
`heal_barracks.json`	500, 0, 250, 0; 50 (500, 0, 250, 0; 40)	town	barracks +1.0 buff heal garrison
`heal_camel_stables.json` *[new]*	500, 0, 250, 0; 50 *[new]*	town *[new]*	camel stables +1.0 buff heal garrison *[new]*
`heal_cavalry_stables.json` *[new]*	500, 0, 250, 0; 50 *[new]*	town *[new]*	cavalry stables +1.0 buff heal garrison *[new]*
`heal_chariot_stables.json` *[new]*	500, 0, 250, 0; 50 *[new]*	town *[new]*	chariot stables +1.0 buff heal garrison *[new]*
`heal_dog_kennels.json` *[new]*	500, 0, 250, 0; 50 *[new]*	town *[new]*	dog kennels +1.0 buff heal garrison *[new]*
`heal_elephant_stables.json` *[new]*	500, 0, 250, 0; 50 *[new]*	town *[new]*	elephant stables +1.0 buff heal garrison *[new]*
`heal_hall.json` *[new]*	500, 0, 250, 0; 50 *[new]*	town *[new]*	military halls +1.0 buff heal garrison *[new]*
`heal_house.json` *[new]*	500, 0, 250, 0; 50 *[new]*	town *[new]*	houses +1.0 buff heal garrison *[new]*
`heal_temple.json`	500, 0, 250, 0; 50 (500, 0, 250, 0; 40)	town (city)	temples +1.0 buff heal garrison (+50%)
`healer_range_1.json` (`heal_range.json`)	200, 0, 100, 0; 50 (400, 0, 200, 0; 40)	town	healers +3 heal range (+5 heal and vision range)
`healer_range_2.json` (`heal_range_2.json`)	400, 0, 200, 0; 60 (800, 0, 400, 0; 40)	city	healers +3 heal range (+5 heal and vision range)
`healer_range_3.json` *[new]*	600, 0, 300, 0; 70 *[new]*	metropolis *[new]*	healers +3 heal range *[new]*
`healer_rate_1.json` (`heal_rate.json`)	300, 0, 150, 0; 50 (500, 0, 250, 0; 40)	town	healers −20% heal time
`healer_rate_2.json` (`heal_rate_2.json`)	600, 0, 300, 0; 60 (1000, 0, 500, 0; 40)	city	healers −20% heal time
`healer_rate_3.json` *[new]*	900, 0, 450, 0; 70 *[new]*	metropolis *[new]*	healers −20% heal time *[new]*
`health_regen_units.json`	1000, 0, 500, 0; 60 (1000, 0, 250, 0; 40)	city	idle units +0.5 health regeneration rate

4.4 Comparison table (miscellaneous)

technology	**cost** (f, w, m, s; time)	**phase**	**effects**
`phase_city.json`	500, 500, 500, 500; 90 (0, 0, 750, 750; 60) 3 (4) town structures	town	centres +30% territory radius (+50%) (citizen soldiers +10% health)
`phase_town.json`	500, 500, 0, 0; 60 (500, 500, 0, 0; 30) 5 village structures	village	centres +30% territory radius (+50%) (citizen soldiers +20% health) centres +100% build time and resouce costs (–)
`phase_village.json`	*[autoresearched]*	–	centres −50% build time and resouce costs (–)
`unlock_champion_units.json`	400, 400, 400, 0; 90 (0, 0, 1000, 0; 90)	city	
`unlock_counterespionage` (`spy_counter.json`)	2000 silver; 75 (400, 0, 400, 0; 60)	city	+100% bribe costs (+50%)
`unlock_shared_dropsites.json`	500 silver; 60 (200, 200, 100, 100; 40)	village	
`unlock_shared_los.json`	250 silver; 60 (100, 0, 100, 0; 40)	village	
`unlock_spies.json`	1000 silver; 75 (500, 500, 300, 300; 80)	town (city)	
`wonder.json` (`pop_wonder.json`)	2000, 2000, 2000, 2000; 120 (2000, 3000, 500, 500; 120)	wonder	+10% maximum population each wonder (+40 (flat))

NB: Each rank grants +5% health, attack damage, and capture strength, but also −10% gather rate; furthermore, melee units receive +1% movement speed and ranged units −1% ranged spread.

4.5 Comparison table (siege)

technology	**cost** (f, w, m, s; time)	**phase**	**effects**
`siege_armour.json` (`siege_armor.json`)	0, 500, 250, 0; 60 (0, 500, 250, 0; 40)	city	siege weapons +2 hack armour
`siege_attack.json`	0, 1000, 500, 0; 60 (0, 1000, 500, 0; 40)	city	siege weapons +25% crush attack damage
`siege_cost_metal.json`	500, 500, 0, 250; 60 (500, 500, 0, 250; 40)	city	siege weapons −20% metal cost
`siege_cost_wood.json`	500, 0, 500, 250; 60 (500, 0, 500, 250; 40)	city	siege weapons −20% wood cost

4.6 Comparison table (structures)

technology	**cost** (f, w, m, s; time)	**phase**	**effects**
`centre_watch_1.json` *[new]*	200, 0, 100, 0; 40 *[new]*	village *[new]*	centres +1 default arrow and +10.0 m vis *[new]*
`centre_watch_2.json` *[new]*	400, 0, 200, 0; 50 *[new]*	town *[new]*	centres +1 default arrow and +10.0 m vis *[new]*
`centre_watch_3.json` *[new]*	600, 0, 300, 0; 60 *[new]*	city *[new]*	centres +1 default arrow and +10.0 m vis *[new]*
`centre_watch_4.json` *[new]*	600, 0, 300, 0; 60 *[new]*	metropolis *[new]*	centres +1 default arrow and +10.0 m vis *[new]*
`house_population_1.json` (`pop_house_01.json`)	0, 100, 0, 100; 40 (0, 300, 0, 100; 40)	village (town)	houses +20% population
`house_population_2.json` (`pop_house_02.json`)	0, 200, 0, 200; 50 (0, 300, 0, 300; 40)	town (city)	houses +20% population
`house_population_3.json` *[new]*	0, 300, 0, 300; 60 *[new]*	city *[new]*	houses +20% population *[new]*
`house_population_4.json` *[new]*	0, 400, 0, 400; 60 *[new]*	metropolis *[new]*	houses +20% population *[new]*
`tower_armour.json` (`attack_tower_defense.json`)	0, 500, 500, 500; 60 (0, 500, 500, 500; 40)	city	stone towers +2.0 crush, hack, and pierce armour
`tower_crenellations.json` (`attack_tower_crenellations.json`)	0, 250, 250, 500; 60 (0, 0, 250, 500; 40)	town	towers and fortresses +40% arrows per garrisoned soldier
`tower_decay.json` (`decay_outpost.json`)	0, 0, 0, 100; 40 (0, 0, 0, 100; 40)	village	outposts −50% decay rate
`tower_murderholes.json` (`attack_tower_murderholes.json`)	0, 250, 0, 250; 60 (0, 500, 0, 100; 40)	city	towers and fortresses 0 minimum attack range
`tower_range.json` (`attack_tower_range.json`)	0, 500, 250, 0; 50 (0, 500, 250, 0; 40)	town	towers and fortresses +8 m maximum attack range (and vision
`tower_vision.json` (`vision_outpost.json`)	100, 0, 0, 0; 40 (100, 0, 0, 0; 40)	village	all towers +20% vision range (outposts +50%)
`tower_watch.json` (`attack_tower_watch.json`)	500, 0, 250, 0; 40 (500, 0, 0, 0; 40)	village	sentry and stone towers +1 default arrow
`walls_geometric.json` (`health_walls_geometric_masonry.json`)	0, 0, 0, 250; 60 (0, 0, 0, 200; 40)	city (town)	city walls +2 crush armour and +20% build time (+2; +10%)
`walls_rubble.json` (`buildtime_walls_rubble.json`)	0, 250, 0, 0; 60 (0, 200, 0, 0; 40)	city (town)	city walls −20% build time and −1 crush armour

4.7 Comparison table (training)

technology	**cost** (f, w, m, s; time)	**phase**	**effects**
`drill_camelry_1.json` *[new]*	150, 0, 100, 0; 40 *[new]*	village *[new]*	camelry starts at rank 1/12 *[new]*
`drill_camelry_2.json` *[new]*	300, 0, 200, 0; 50 *[new]*	town *[new]*	camelry starts at rank 2/12 *[new]*
`drill_camelry_3.json` *[new]*	450, 0, 300, 0; 60 *[new]*	city *[new]*	camelry starts at rank 3/12 *[new]*
`drill_cavalry_1.json` *[new]*	300, 0, 200, 0; 40 *[new]*	village *[new]*	cavalry starts at rank 1/12 *[new]*
`drill_cavalry_2.json` *[new]*	600, 0, 400, 0; 50 *[new]*	town *[new]*	cavalry starts at rank 2/12 *[new]*
`drill_cavalry_3.json` *[new]*	900, 0, 600, 0; 60 *[new]*	city *[new]*	cavalry starts at rank 3/12 *[new]*
`drill_chariotry_1.json` *[new]*	250, 0, 150, 0; 40 *[new]*	village *[new]*	chariots start at rank 1/12 *[new]*
`drill_chariotry_2.json` *[new]*	500, 0, 300, 0; 50 *[new]*	town *[new]*	chariots start at rank 2/12 *[new]*
`drill_chariotry_3.json` *[new]*	750, 0, 450, 0; 60 *[new]*	city *[new]*	chariots start at rank 3/12 *[new]*
`drill_dogs_1.json` *[new]*	200, 0, 0, 0; 40 *[new]*	village *[new]*	war dogs start at rank 1/12 *[new]*
`drill_dogs_2.json` *[new]*	400, 0, 0, 0; 50 *[new]*	town *[new]*	war dogs start at rank 2/12 *[new]*
`drill_dogs_3.json` *[new]*	600, 0, 0, 0; 60 *[new]*	city *[new]*	war dogs start at rank 3/12 *[new]*
`drill_elephantry_1.json` *[new]*	400, 0, 200, 0; 40 *[new]*	village *[new]*	war elephants start at rank 1/12 *[new]*
`drill_elephantry_2.json` *[new]*	800, 0, 400, 0; 50 *[new]*	town *[new]*	war elephants start at rank 2/12 *[new]*
`drill_elephantry_3.json` *[new]*	1200, 0, 600, 0; 60 *[new]*	city *[new]*	war elephants start at rank 3/12 *[new]*
`drill_infantry_1.json` *[new]*	200, 0, 200, 0; 40 *[new]*	village *[new]*	infantry starts at rank 1/12 *[new]*
`drill_infantry_2.json` *[new]*	400, 0, 400, 0; 50 *[new]*	town *[new]*	infantry starts at rank 2/12 *[new]*
`drill_infantry_3.json` *[new]*	600, 0, 600, 0; 60 *[new]*	city *[new]*	infantry starts at rank 3/12 *[new]*
`training_barracks.json` (`training_conscription.json`)	500, 0, 0, 0; 60 (500, 0, 0, 0; 40)	city	barracks −0.1 batch time modifier
`training_camel_stables.json` *[new]*	500, 0, 0, 0; 60 *[new]*	city *[new]*	camel stables −0.1 batch time modifier *[new]*
`training_cavalry_stables.json` *[new]*	500, 0, 0, 0; 60 *[new]*	city *[new]*	cavalry stables −0.1 batch time modifier *[new]*
`training_chariot_stables.json` *[new]*	500, 0, 0, 0; 60 *[new]*	city *[new]*	chariot stables −0.1 batch time modifier *[new]*
`training_dog_kennels.json` *[new]*	500, 0, 0, 0; 60 *[new]*	city *[new]*	dog kennels −0.1 batch time modifier *[new]*
`training_elephant_stables.json` *[new]*	500, 0, 0, 0; 60 *[new]*	city *[new]*	elephant stables −0.1 batch time modifier *[new]*
`training_female.json` (`unlock_females_house.json`)	300, 100, 100, 0; 40 (250, 100, 100, 0; 60)	village	females −25% training time
`training_hall.json` *[new]*	500, 0, 0, 0; 60 *[new]*	city *[new]*	military halls −0.1 batch time modifier *[new]*
`training_shipyard.json` (`training_naval_architects.json`)	500, 0, 0, 0; 60 (200, 200, 0, 0; 40)	city	shipyards −0.1 batch time modifier (docks)

4.8 Special technologies

technology	**factions**	**cost** (f, w, m, s; time)	**phase**	**effects**
special/agoge.json (hellenes/spartans_agoge.json)	spart	400, 200, 400, 0; 60 (500, 0, 500, 0; 60)	town (city)	hoplite infantry +20% training time, +20% health (spear infantry +10% training time, +25% health)
special/archery_tradition.json (mauryans/special_archery_tradition.json)	maur, pers, sele (maur, pers)	400, 400, 200, 0; 60 (500, 500, 250, 0; 60)	village	archers +20% training time, +20% maximum range (−20%; +10.0; +10.0 vision, −20% health)
special/architecture.json (persians/persian_architecture.json)	pers	0, 200, 200, 0; 60 (0, 200, 200, 0; 60)	village	non-defensive structures +20% building time (+20%), +20% capture points (+25%), +20% health (+25%)
special/colonization.json (carthaginians/special_colonisation.json)	athen, cart, spart (cart)	250, 250, 250, 250; 60 (0, 500, 500, 0; 60)	town	centres and docks −30% building time (civic structures −25% building time)
special/equine_transports.json (persians/special_equine_transports.json)	pers	200, 400, 200, 0; 60 (0, 300, 300, 0; 60)	city	
special/immortals.json (persians/immortals.json)	pers	400, 200, 200, 0; 60 (200, 0, 200, 0; 60)	city	immortals −40% training time, −10% health (−40%, −10%)
special/iphicratean_reforms.json (hellenes/special_iphicratean_reforms.json)	athen	300, 0, 300, 0; 60 (300, 0, 300, 0; 60)	city	
special/long_walls.json (hellenes/special_long_walls.json)	athen	0, 0, 250, 250; 60 (0, 0, 250, 250; 60)	city	city walls +20% health, capture points, stone and woo (all new; buildable in own and neutral territory)
special/marching.json *[new]*	mace, rome *[new]*	500, 200, 100, 0; 60 *[new]*	town *[new]*	melee infantry +10% walk speed *[new]*
special/mercenaries.json (upgrade_rank_advanced_mercenary.json)	athen, cart, mace, ptol, sele, spart	200, 0, 300, 0; 40 (200, 200, 0, 0; 40)	town	mercenaries +10% health, −10% gather rate (advanced rank; +20% training time)
special/nisean_horses.json (successors/special_war_horses.json)	pers, sele	600, 200, 200, 0; 60 (200, 0, 200, 0; 60)	city	cavalry +20% health
special/parade.json (successors/special_parade_of_daphne.json)	sele	500, 0, 500, 0; 60 (500, 0, 500, 0; 60)	city	all champions −20% training time (fortress −0.2 batch time modifier)
special/siege_bolt_accuracy.json (siege_bolt_accuracy.json)	athen, cart, mace, ptol, rome, spart	0, 250, 250, 0; 60 (0, 250, 250, 0; 40)	city	bolt shooters −20% ranged attack spread
special/silvershields.json (successors/upgrade_mace_silvershields.json)	*[unavailable]* mace	0, 0, 1000, 0; 60 (0, 0, 1000, 0; 40)	city	hoplite champions +15% c/h/p melee damage, +10% health (no modifications)
special/spear_fighting.json hellenes/attack_inf_spearfighting.json)	*[unavailable]* athen, mace, spart	300, 300, 150, 0; 60 (0, 0, 100, 0; 40)	city	spear infantry +20% c/h/p melee damage (+2.0 hack)
special/steel_working.json (attack_steel_working.json)	iber, maur	150, 300, 300, 0; 60 (0, 200, 200, 0; 60)	city	sword units +20% c/h/p melee damage (+20% hack)
special/training_docks.json *[new]*	brit, gaul, iber, maur *[new]*	500, 0, 0, 0; 60 *[new]*	city *[new]*	docks −0.1 batch time modifier *[new]*
special/training_harbour.json (carthaginians/training_phoenician_naval_architects.json)	cart	500, 0, 0, 0; 60 (200, 200, 0, 0; 40)	city	harbours −0.1 batch time modifier (super docks)
special/vision.json (romans/vision_sibylline.json)	rome	0, 0, 250, 0; 60 (0, 0, 250, 0; 40)	city	units +15.0 m vision range (+25%)

4.9 Civilization bonuses

- Celtic (Britons, Gauls):

  blacksmith technologies cost −20% resources and time; *[new]*

  civic, economic, military, and resource structures have −20% health, capture points, and build time, and cost no stone; temples cost +250.0 wood; *[changed]*

  economic structures grant +2.0 population bonus, military structures +4.0, temples +6.0; *[changed]*

  walls have −20% health, capture points, build time, and stone and wood costs; *[changed]*

  druids (healers) have +20% walk speed, +4.0 crush, hack, and pierce armour levels, and two more auras ("Curse" and "Motivation"), but also cost +50.0 metal, +50.0 wood, and +100% training time; *[new]*

  naked fanatics have +15% attack damage and +30% walk speed, but also −4.0 armour levels. *[changed]*

- Greek (Athenians, Macedonians, Spartans):

  civic structures have +20% health and capture points. *[changed]*

- North African (Carthaginian, Ptolemaic):

  war elephants have −20% metal and wood costs and −10% training time, but also −10% attack damage and −20% maximum health. *[new]*

- Tribal (Britons, Gauls, Iberians):

  centres have −20% build time, population bonus, garrison capacity, capture points, health, experience, and territory influence radius. *[new]*

- Athenians:

  storehouse technologies cost −10% resources and time. *[new]*

- Britons:

  infantry swordsmen have +10% walk speed; *[new]*

  sentry towers cost no stone and have −25% construction time and −10% health. *[new]*

- Carthaginians:

  market technologies cost −25% resources and time; *[new]*

  markets have −50% resource costs and construction time; *[new]*

  mercenaries have −20% training time; *[new]*

  ships have +20.0 m vision range; *[changed]*

  city walls have +40% health, capture points, build time, and stone and wood costs. *[changed]*

- Gauls:

  infantry spearmen have +10% melee attack damage. *[new]*

- Iberians:

  infantry javelinists have +10% ranged attack damage. *[new]*

- Macedonians:

  cavalry lancers have +10% melee attack damage. *[new]*

- Mauryans:

  +10% maximum population; *[unchanged]*

  workers −10% stone gather rate; *[new]*

  city walls have −25% health, capture points, and build time, cost no stone, but +200% wood. *[changed]*

- Persians:

  +10% maximum population; *[unchanged]*

  workers −5% wood gather rate; *[new]*

  battering rams have +20% maximum health but also cost +100.0 wood. *[changed]*

- Ptolemies:

  barracks, blacksmiths, houses, and economic structures cost −100.0 wood but have +50% building time; *[changed]*

  healers have +3.0 healing range; *[new]*

  temple technologies cost −30% resources and time. *[new]*

- Romans:

  barracks technologies cost −25% resources and time; *[new]*

  infantry spearmen have +15% maximum health; *[new]*

  infantry swordsmen have +10% melee attack damage; *[new]*

  stone throwers have +20% crush damage, but also cost +50.0 stone. *[changed]*

- Seleucids:

  champion cataphract cavalry has +3.0 armour levels, −5% walk speed, +40.0 metal and +20.0 wood costs; *[new]*

  champion cataphract elephants have +3.0 armour levels, −5% walk speed, +100.0 metal and +50.0 wood costs. *[new]* and war elephant have . *[new]*

- Spartans:

  no longer have a −10% maximum population penalty; *[removed]*

  females have +30% melee attack damage; *[changed]*

  melee and ranged cavalry have a −10% attack damage penalty; *[new]*

  hoplites have +10% walk speed. *[new]*

5 Auras

5.1 Civilization bonuses

- Tribal (Britons, Gauls, Iberians):
  centres have −20% resource cost and loot. *[new]*
- Athenians:
  warships have +10% walk speed. *[new]*
- Carthaginians:
  traders have +5% gain. *[new]*
- Mauryans:
  temples have −50% resource costs and construction time (former team bonus). *[changed]*
- Persians:
  structures +10% territory influence radius. *[new]*
- Seleucids:
  centres have −30% resource costs (former team bonus). *[changed]*

5.2 Team bonuses

- Athenian allies: warships −20% (from −25%) construction time *[changed]*
- Briton allies: units cost −4% metal *[new]*
  formerly: healers −20% resource costs
- Carthaginian allies: land traders −20% training time and +5% walk speed *[new]*
  formerly: markets +0.1 (i.e. 10%) international bonus
- Gaulish allies: infantry spearmen −20% training time *[new]*
  formerly: all technologies −20% research time
- Iberian allies: infantry javelinists −20% training time *[new]*
  formerly: citizen javelinists (infantry and cavalry) −20% resource costs
- Macedonian allies: units cost −4% wood *[new]*
  formerly: markets +20% sell prices
- Mauryan allies: healers −25% training time *[new]*
  formerly: temple technologies and temples cost −50% resources and time
- Persian allies: land traders +10% (from +15%) gain *[changed]*
- Ptolemaic allies: units cost −4% food *[new]*
  formerly +1.0 food trickle rate *[unchanged]*
- Roman allies: infantry swordsmen −20% training time *[new]*
  formerly: all infantry −20% training time
- Seleucid allies: centres −20% construction time *[new]*
  formerly: centres −20% resource costs
- Spartan allies: infantry hoplites −20% training time *[new]*
  formerly: citizen infantry spearmen +10% health

5.3 Catafalques

- Athenians:
  worker +15% resource gather base speed; *[unchanged]*
  economic technologies cost −10% food, wood, metal, and stone. *[unchanged]*
- Britons:
  soldiers +15% vision range, walk speed, and run speed; *[unchanged]*
  javelin units +20% ranged attack maximum range. *[unchanged]*
- Carthaginians:
  melee cavalry +1.0 crush, hack, and pierce armour, and +10% health. *[unchanged]*
- Gauls:
  soldiers require −25% experience to promote and have +5% melee and ranged attack damage; *[unchanged]*
  workers have −10% food.grain gather rate. *[unchanged]*
- Iberians:
  mercenary citizen soldiers cost −25% metal; *[unchanged]*
  soldiers have +10% health. *[unchanged]*
- Macedonians:
  humans, mechanical units, and structures gain +5.0 food and +5.0 wood in loot. *[unchanged]*
- Mauryans:
  structures +20% territory influence radius; *[unchanged]*
  soldiers +15% capture attack strength. *[unchanged]*
- Persians:
  structures cost −10% food, wood, metal, and stone, and have +5% health. *[unchanged]*
- Ptolemies:
  technologies cost −10% food, wood, metal, and stone. *[unchanged]*
- Romans:
  females cost −20% food and +10% resource gather base speed; *[unchanged]*
  humans and mechanical units +1.0 crush, hack, and pierce armour. *[unchanged]*
- Seleucids:
  temple technologies and temples cost −10% food, wood, metal, and stone; *[unchanged]*
  +5% maximum population limit; *[unchanged]*
  elephant champions cost −10% food, wood, metal, and stone. *[unchanged]*
- Spartans:
  citizen soldier spear infantry cost −10% food, wood, metal, and stone; *[unchanged]*
  champion spear infantry cost −5% food, wood, metal, and stone; *[unchanged]*
  workers +15% metal.ore gather rate. *[unchanged]*

5.4 Heroes

- Athenians:

  Iphicrates [formation]: soldiers +3.0 crush, hack, and pierce armour, +15% walk and run speed. *[unchanged]*

  Iphicrates [global]: javelin infantry +15% walk and run speed. *[unchanged]*

  Pericles [60 m]: workers +15% building rate. *[unchanged]*

  Pericles [global]: temples cost −25% stone, +2.0 garrisoned heal rate. *[unchanged]*

  Themistocles [garrison]: allied [?] ships +50% walk and run speed, −50% batch time modifier. *[unchanged]*

  Themistocles [global]: ships −20% construction time and −50% metal cost. *[unchanged]*

- Britons:

  Boudicca [40 m]: champions +10% walk and run speed, +20% melee and ranged attack damage, and +2.0 capture attack strength. *[unchanged]*

  Caratacos [global]: soldiers and siege weapons +10% walk and run speed, +1.0 crush, hack, and pierce armour. *[unchanged]*

  Cunobelin [30 m]: humans +0.8 health regeneration rate. *[unchanged]*

- Carthaginians:

  Hamilcar [global]: soldiers and siege weapons +15% walk and run speed. *[unchanged]*

  Hannibal [60 m]: soldiers and siege weapons +20% melee and ranged attack damage, and +1.0 capture attack strength. *[unchanged]*

  Maharbal [60 m]: melee cavalry +30% melee attack damage. *[unchanged]*

- Gauls:

  Brennus [60 m]: humans and mechanical units gain +15.0 metal in loot. *[unchanged]*

  Vercingetorix [60 m]: soldiers and siege weapons +20% melee and ranged attack damage, and +1.0 capture attack strength. *[unchanged]*

  Viridomarus [global]: workers +15% resource gather rate. *[unchanged]*

- Iberians:

  Caros [garrison]: structures and siege towers +75% arrows. *[unchanged]*

  Caros [50 m]: soldiers +1.0 crush, hack, and pierce armour. *[unchanged]*

  Indibil [global]: soldiers −20% training time, −20% food, wood, metal, and stone costs. *[unchanged]*

  Viriato [60 m]: soldiers +20% walk and run speed. *[unchanged]*

  Viriato [60 m]: soldiers and siege weapons gain +100% food, wood, metal, and stone in loot. *[unchanged]*

- Macedonians:

  Alexander [global]: structures +10% territory influence radius. *[removed]*

  Alexander [60 m]: enemy centres −50% garrisoned capture points regeneration rate. *[unchanged]*

  Craterus [60 m]: pike infantry +20% melee attack damage and capture attack strength. *[unchanged]*

  Demetrius [60 m]: siege weapons +1.0 crush, hack, and pierce armour, +10% melee and ranged attack damage, +10% ranged attack maximum range, +10% vision range. *[unchanged]*

  Philip [60 m]: champions +20% melee and ranged attack damage, and +2.0 capture attack strength. *[unchanged]*

  Pyrrhus [global]: soldiers +20% melee and ranged attack damage, but also −15% health. *[unchanged]*

- Mauryans:

  Ashoka [global]: temples −50% build time, wood, and stone costs, temple technologies −50% research time, food, wood, metal, and stone costs. *[unchanged]*

  Chanakya [garrison]: technologies −20% research time, −50% food, wood, metal, and stone costs. *[unchanged]*

  Chanakya [35 m]: humans +0.8 health regeneration rate. *[unchanged]*

  Maurya [global]: elephants −25% training time. *[new]*

- Persians:

  Cyrus [60 m]: cavalry +20% melee and ranged attack damage, and +1.0 capture attack strength. *[unchanged]*

  Darius [global]: soldiers, siege weapons, and traders +10% walk and run speed. *[unchanged]*

  Xerxes [60 m]: workers +15% build rate and resource gather rate. *[unchanged]*

- Ptolemies:

  Cleopatra [60 m]: soldiers and siege weapons −20% attack reload time. *[unchanged]*

  Cleopatra [30 m]: allied heroes +10% health. *[unchanged]*

  Cleopatra [30 m]: enemy heroes −10%. *[unchanged]*

  Ptolemy I [60 m]: workers +10% build rate. *[unchanged]*

  Ptolemy I [global]: mercenaries −50% food, wood, metal, and stone costs. *[unchanged]*

  Ptolemy IV [60 m]: pike units +40% health. *[unchanged]*

- Romans:

  Marcellus [60 m]: cavalry +15% melee and ranged attack damage. *[unchanged]*

  Marcellus [30 m]: enemy infantry −10% melee and ranged attack damage. *[unchanged]*

  Maximus [global]: humans and structures +2.0 crush, hack, and pierce armour. *[unchanged]*

  Scipio [60 m] (instead of 10 m): soldiers and siege weapons +20% melee and ranged attack damage, and +2.0 capture attack strength. *[changed]*

- Seleucids:

  Antiochus III [global]: cavalry +2.0 crush, hack, and pierce armour. *[unchanged]*

  Antiochus IV [80 m]: enemy structures and mechanical units −20% health. *[unchanged]*

  Seleucus [80 m]: elephant champions +20% walk and run speed, melee crush and hack attack damage. *[unchanged]*

- Spartans:

  Agis [60 m]: soldiers +15% walk speed. *[new]*

  Brasidas [60 m]: citizen javelin infantry +25% ranged pierce attack damage, +1.0 crush, hack, and pierce armour. *[unchanged]*

  Leonidas [30 m]: spear units +25% melee attack damage, and +1.0 capture attack strength. *[unchanged]*

5.5 Units

- Druids (Briton and Gaulish healers):

  [10 m]: enemy soldiers −10% melee and ranged attack damage and −10% capture strength. *[new]*

  [20 m]: infantry +15% walk speed. *[new]*

- Females [10 m]: citizen soldiers +10% building rate and +10% resource gather rate. *[unchanged]*
- Heroes [garrison]: structures and mechanical units +2.0 garrisoned capture points regeneration rate. *[unchanged]*
- Infantry [garrison, stackable]: battering rams +0.3 walk speed. *[new]*
- Land traders [10 m]: other land traders +1.0 crush, hack, and pierce armour. *[new]*
- Merchant ships [20 m]: other merchant ships +1.0 crush, hack, and pierce armour. *[new]*
- Scythed chariots [10 m]: enemy melee infantry −2.0 crush, hack, and pierce armour. *[new]*

5.6 Structures

- Centre: each of the following auras grants civic structures +10% capture points and workers +5% build rate, −5% gather rates, +1% walk speed;

  [25 m]: enabled by default

  [50 m]: enabled by default

  [75 m]: enabled by village phase

  [100 m]: enabled by town phase

  [125 m]: enabled by city phase

  [150 m]: enabled by metropolis phase

  Cumulatively within one/two/three/four/five/six auras:

  capture points at 110%/121%/133%/146%/161%/177%,

  build rates at 105%/110%/116%/122%/128%/134%,

  gather rates at 95%/90%/86%/81%/77%/74%,

  walk speeds at 101%/102%/103%/104%/105%/106%.

- Corral [20 m]: workers +15% food.meat gather rate. *[new]*
- Farmstead [30 m]: workers +10% food.grain gather rate. *[new]*
- Harbour [garrison]: ships heal 10.0 health per second. *[unchanged]*
- Library [global, stackable]: −10% structure construction time (instead of −10% technology resource costs) and −20% technology research time (instead of −10%). *[changed]*
- Lighthouse [150 m]: ships +5% movement speed. *[new]*
- Monument [50 m]: soldiers +20% melee and ranged attack damage. *[unchanged]*
- Pillar [75 m]: traders +20% movement speed. *[unchanged]*
- Rotary mill [60 m]: workers +20% food.grain gather rate (instead of +25%). *[changed]*
- Storehouse [40 m]: workers +5% wood.tree gather rate. *[new]*
- Temple [40 m]: humans heal 1.0 health per second. *[unchanged]*
- Theatre [75 m]: centres +20% capture points and +50% territory influence weight. *[new]*
- Theatre [global]: workers +5% gather rates (instead of structures +20% territory influence). *[changed]*
- Vestal temple, Ishtar gate [75 m]: structures +50% garrisoned capture points regeneration rate. *[unchanged]*
- Walls [garrison]: soldiers have +3.0 crush, hack, and pierce armour and +20.0 m vision. *[unchanged]*
- Wonder [each]:

  [50 m] (instead of 60 m): humans heal 2.0 health per second (instead of 3.0); *[changed]*

  [100 m]: workers and traders +5% movement speed; *[new]*

  [global, stackable]: units −10% training time; *[changed]*

  with “glorious expansion” [global, stackable]: +10% maximum population limit (instead of +40.0); *[changed]*

  with “glorious expansion” [global, stackable]: structures +10% territory influence radius. *[new]*