Keyboard Shortcuts

Unit Orders

Airdrop	P
Airlift	T
Air superiority mission	S
Automate worker	A
leave existing improvements	Shift-A
this city only	Shift-I
this city, leave existing imp.	Ctrl-Shift-I
clean up pollution only	Shift-P
clear forests only	Shift-F
clear jungle only	Shift-J
Bombard / Bombing mission	B
automated bombard	Shift-B
automated precision bombing	Shift-P
Build airfield	Ctrl-Shift-A
Build army	B
Build barricade	Ctrl-F
Build city / Join City	B
Build colony	B
Build fortress	Ctrl-F
Build mine	M
Build outpost	Ctrl-O
Build radar tower	Ctrl-T
Build railroad	Shift-R
Build railroad to	Ctrl-Shift-R
Build road	R
Build road to	Ctrl-R
Build road to, then colonize	Ctrl-B
Clean up pollution	Shift-C
Clear forest	Shift-F
Clear wetlands (jungle/marsh)	Shift-C
Disband	D
Explore	E
Fortify/Garrison	F
Go to	G
Go to (whole stack)	J or X
Go to (units of cur. type in stack)	Ctrl-J / Ctrl-X
Hold (skip turn)	Spacebar
Hurry improvement	Ctrl-H
Irrigate	I
Irrigate to nearest city	Ctrl-I
Pillage	Shift-P
Plant forest	N
Re-base mission	Shift-R
Recon mission	R
Sentry	Y
Sentry (wake near enemy only)	Shift-Y
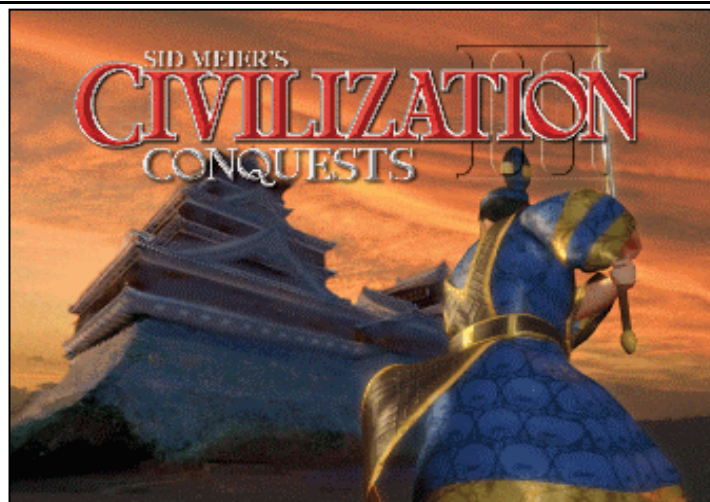
More Unit Orders

Trade network	Ctrl-N
Unload/load	L
Upgrade	U
Upgrade all	Shift-U
Wait	W or Tab

Cycle Cities and Units

Next City	. (period)
Previous City	, (comma)
Next City in Disorder	Shift-. (>)
Previous City in Disorder	Shift-, (<)
Next Unit	]
Previous Unit	[
Next Unit of Selected Type	Shift-] (})
Previous Unit of Selected Type	Shift-[({)

Advisors

Domestic advisor	F1
Trade advisor	F2
Military advisor	F3
Foreign advisor	F4
Cultural advisor	F5
Science advisor	F6

City Window

Add to production queue	Shift-Click
Contact city governors	G
Hurry production (rush job)	H
Load production queue	Q
Save production queue	Shift-Q

Game Stuff

Center on active unit	C
Center on capital	H
Center on message	Shift-X
Change government (revolution)	Shift-G
Change mobilization	Shift-M
Clean up map	Ctrl-Shift-M
Contact rival leaders	Shift-D
Demographics	F11
End turn immediately	Shift-Enter
Establish an embassy	Ctrl-E
Go to city	Ctrl-Shift-G
Histograph/Score	F8
Locate city	Shift-L
Palace	F9
Plant a spy	Ctrl-Shift-E
Rename unit	Shift-N
Spaceship	F10
Toggle map grid	Ctrl-G
Use embassy or spy	Shift-E
Wonders of the World	F7
Zoom in/out	Z

Other Stuff

Change preferences	Ctrl-P
Change sound preferences	Shift-S
Force GoTo's & Automoves	Ctrl-U
Hide interface	Del
Initiate chat	~
Load game	Ctrl-L
Main menu	Ctrl-M
New game	Ctrl-Shift-Q
Quit	Esc
Resign and quit	Ctrl-Q
Retire	Shift-Q
Save game	Ctrl-S
Show game version	Ctrl-F4
Toggle button direction	Backspace

Ground Units - Ancient

Warrior	Enkidu Warrior	Jaguar Warrior	Spearman	Impi	Hopilite	Numidian Mercenary
			Bronze Working	Bronze Working	Bronze Working	Bronze Working
10	10	10	20	20	20	30
1.1.1	1.2.1	1.1.2	1.2.1	1.2.2	1.3.1	2.3.1
Swordsman	Pikeman	Swordsman	Pikeman	Musketman	Musketman	Pikeman
	Sumerian	*Aztec*		*Zulu*	*Greek*	*Carthaginian*

Archer	Bowman	Javelin Thrower	Swordsman	Legionary	Immortal	Gallic Swordsman
Warrior Code	Warrior Code	Warrior Code	Iron Working	Iron Working	Iron Working	Iron Working
20	20	30	30	30	30	40
2.1.1 (1 def. bombard)	2.2.1 (1 def. bombard)	2.2.1 (enslavement)	3.2.1	3.3.1	4.2.1	3.2.2
Longbowman	Longbowman	Longbowman	Medieval Infantry	Medieval Infantry	Medieval Infantry	Medieval Infantry
	Babylonian	*Maya*	Iron	Iron, *Roman*	Iron, *Persian*	Iron, *Celtic*

Ancient Cavalry	Chariot	War Chariot	Three Man Chariot	Horseman	Mounted Warrior	required advance
Mathematics	The Wheel	The Wheel	The Wheel	Horseback Riding	Horseback Riding	shield cost
40	20	20	30	30	30	attack.defend.move
3.2.2 (+ 1 HP)	1.1.2	2.1.2	2.2.2	2.1.2	3.1.2	upgrades to
	Horseman	Knight	Knight	Knight	Knight	resources, *nationality*
Statue of Zeus	Horses	Horses, *Egyptian*	Horses, *Hittite*	Horses	Horses, *Iroquois*	

Ground Units - Middle Ages

Pikeman	**Swiss Mercenary**	**Medieval Infantry**	**Longbowman**	**Berserk**	**Crusader**	**Musketman**
Feudalism	Feudalism	Feudalism	Invention	Invention	Chivalry	Gunpowder
30	30	40	40	70	70	60
1.3.1	1.4.1	4.2.1	4.1.1 (2 def. bombard)	6.2.1	5.3.1	2.4.1
Musketman	Musketman	Guerilla	Guerilla	Guerilla		Rifleman
Iron	Iron, *Dutch*	Iron		*Viking*	Knights Templar	Saltpeter

Musketeer	**Knight**	**War Elephant**	**Samurai**	**Rider**	**Keshik**	**Ansar Warrior**
Gunpowder	Chivalry	Chivalry	Chivalry	Chivalry	Chivalry	Chivalry
60	70	70	70	70	60	60
2.5.1 (2 def. bombard)	4.3.2	4.3.2 (+ 1 HP)	4.4.2	4.3.3	4.2.2 (ignore mountains)	4.2.3
Rifleman	Cavalry	Cavalry	Cavalry	Cavalry	Cavalry	Cavalry
Saltpeter, *French*	Horses, Iron	*Indian*	Iron, *Japanese*	Horses, Iron, *Chinese*	Horses, *Mongolian*	Horses, Iron, *Arabian*

Conquistador	**Cavalry**	**Cossack**	**Sipahi**	
Astronomy	Military Tradition	Military Tradition	Military Tradition	required advance
70	80	80	100	shield cost
3.2.2 (all terrain as road, zone of control)	6.3.3 (zone of control)	6.3.3 (blitz, zone of control)	8.3.3 (zone of control)	attack.defend.move
				upgrades to
Spanish	Horses, Saltpeter	Horses, Saltpeter, *Russian*	Horses, Saltpeter, *Ottoman*	resources, *nationality*

Ground Units - Industrial and Modern

Artillery Units

Rifleman	Infantry	Guerilla	Paratrooper
Nationalism	Replaceable Parts	Replaceable Parts	Advanced Flight
80	90	90	90
4.6.1	6.10.1	6.6.1 (3 def. bombard)	4.9.1 (zone of control)
Infantry	Mech Infantry	TOW Infantry	Modern Paratrooper
	Rubber		Oil, Rubber

Catapult	Trebuchet	Cannon
Mathematics	Engineering	Metallurgy
20	30	40
4.1.1	6.1.1	8.1.1
Trebuchet	Cannon	Artillery
		Iron, Saltpeter

Marines	Modern Paratrooper	TOW Infantry	Mech Infantry
Amphibious Warfare	Synthetic Fibers	Rocketry	Computers
120	110	120	110
12.6.1 (zone of control)	6.11.1 (zone of control)	12.14.1 (6 def. bombard)	12.18.2 (zone of control)
Rubber	Oil, Rubber		Oil, Rubber

Hwach'a	Artillery	Radar Artillery
Metallurgy	Replaceable Parts	Robotics
40	80	120
8.1.1	12.2.2	16.2.2 (zone of control)
Artillery	Radar Artillery	
Saltpeter, *Korean*		Aluminum

Tank	Panzer	Modern Armor	
Motorized Transport	Motorized Transport	Synthetic Fibers	required advance
100	100	120	shield cost
16.8.2 (zone of control)	16.8.3 (blitz, z.o.c.)	24.16.3 (blitz, zone of control)	attack.defend.move (range)
Modern Armor	Modern Armor		upgrades to
Oil, Rubber	Oil, Rubber, *German*	Oil, Rubber, Aluminum	resources, *nationality*

Cruise Missile	
Rocketry	required advance
60	shield cost
16.4.3	bombard.range.firing rate
	upgrades to
Aluminum	resources, *nationality*

Naval Units

Naval Transports

Curragh	**Privateer**	**Frigate**	**Man-O-War**	**Galley**	**Dromon**	**Caravel**
Alphabet	Magnetism	Magnetism	Magnetism	Mapmaking	Mapmaking	Astronomy
15	60	60	65	30	30	40
1.1.2	2.1.5	2.2.5	4.2.5	1.1.3 - 2	2.1.3 - 2	1.2.4 - 3
	(enslavement)	3.1.2	4.1.2		2.1.2	
Galley				Caravel	Caravel	Galleon
	Iron, Saltpeter	Iron, Saltpeter	Iron, Saltpeter, *English*		*Byzantines*	

Ironclad	**Submarine**	**Nuclear Sub**	**Destroyer**	**Carrack**	**Galleon**
Ironclad	Mass Production	Fission	Combustion	Astronomy	Magnetism
90	100	140	120	40	60
5.6.3	8.4.4	8.4.5	12.8.8	2.2.4 - 3	1.2.4 - 4
6.1.2		(can carry 1 Tactical Nuke)	6.1.2 aa1		
Destroyer				Galleon	Transport
Coal, Iron	Oil	Uranium	Oil	*Portuguese*	
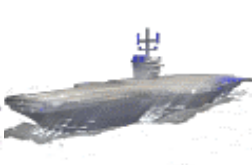
Cruiser	**AEGIS Cruiser**	**Battleship**	**Carrier**	**Transport**	
Combustion	Robotics	Mass Production	Mass Production	Combustion	required advance
160	160	200	180	100	shield cost
15.10.6	15.10.7 (zone of control)	18.12.5	1.8.7 - 4	1.2.6 - 6	attack.defend.move - carrying capacity
7.1.2 aa1	6.2.2 aa3	8.2.2 aa2	aa1		bombard.range.firing rate anti-aircraft
AEGIS Cruiser					upgrades to
Oil	Aluminum, Uranium	Oil	Oil	Oil	resources, *nationality*

Air Units

Fighter	**Jet Fighter**
Flight	Rocketry
80	100
4.2.6	8.4.9
3.6.1	3.9.1
Oil	Oil, Aluminum
upgrades to: Jet Fighter	

F-15	**Stealth Fighter**
Rocketry	Stealth
100	120
8.4.9	8.6.12
6.9.2	6.12.2
Oil, Aluminum, *American*	Oil, Aluminum

Bomber	**Stealth Bomber**	
Flight	Stealth	required advance
100	240	shield cost
0.2.10	0.5.16	attack.defend.move
12.10.3	18.16.3	bombard.range.firing rate
Oil	Oil, Aluminum	resources, *nationality*

Anti-Aircraft Artillery

Flak	**Mobile SAM**	
Flight	Rocketry	required advance
70	100	shield cost
1.6.1 aa2	1.6.2 aa4	a.d.m. anti-aircraft
upgrades to: Mobile SAM		

Nuclear Units

Tactical Nuke	**ICBM**	
Space Flight	Satellites	required advance
300	500	shield cost
6	global	range
Aluminum, Uranium	Aluminum, Uranium	resources

Air Transport
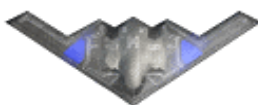
Helicopter	
Advanced Flight	required advance
100	shield cost
0.2.6	attack.defend.move
Oil, Rubber	resources
can carry 3 units	

Special Units

Settler	**Worker**
30	10
0.0.1	0.0.1
costs 2 population	costs 1 population

Scout	**Chasqui Scout**
10	20
0.0.2	1.1.2
expansionist civs only, upgrades to Explorer	ignore mountains, *Inca*, upgrades to Explorer

| **Explorer**	**Leader**	
20		shield cost
0.0.2	0.0.3	a.d.m.
requires Astronomy, treats all terrain as road	requires victorious elite unit or first discovery of new technology	notes
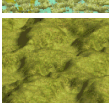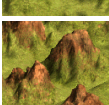
Terrain

	Terrain	Move	Defense	F.S.C	Irrigation	Mines	Roads	Bonus Resources	Luxury Resources	Strategic Resources	Remarks
	Flood Plains	1	10	3.0.0	+1		+1	Wheat			Causes disease
	Grasslands	1	10	2.0.0	+1	+1	+1	Cattle, Wheat, Tobacco	Wine	Horses	
	Plains	1	10	1.1.0	+1	+1	+1	Cattle, Wheat, Sugar	Wine, Ivory	Horses	
	Desert	1	10	0.1.0	+1	+1	+1	Oasis	Incense	Saltpeter, Oil	
	Tundra	1	10	1.0.0		+1	+1	Game	Furs	Oil, Aluminum	
	Forest	2	25	1.2.0			+1	Game	Furs, Dye, Spice, Ivory, Silk	Uranium, Rubber	
	Jungle	3	25	1.0.0			+1	Fruit	Dye, Spice, Silk, Gems	Coal, Rubber	No wheeled units, Causes disease
	Marsh	2	20	1.0.0			+1	Cattle, Fish		Rubber, Oil	No wheeled units, Causes disease, No cities
	Hills	2	50	1.1.0		+2	+1	Gold, Sugar, Tobacco	Wine, Incense	Horses, Iron, Saltpeter, Coal, Aluminum	
	Mountains	3	100	0.1.0		+2	+1	Gold	Gems	Iron, Saltpeter, Coal, Uranium	No wheeled units, No cities
	Volcano	3	80	0.3.0							No wheeled units, No cities, Eruption
	Lake	1	10	2.0.2							Fresh water source (like rivers)
	Coast	1	10	1.0.2				Fish			
	Sea	1	10	1.0.1				Whale, Fish			

F.S.C is Food.Shields.Commerce
Rivers add 1 Commerce to adjacent squares
Grasslands may have 1 shield
Railroads add 1 to irrigation or mines

Resources

F.S.C is the bonus given to Food, Shields and Commerce

Strategic

	F.S.C	Terrain	Requires
Aluminum	0.2.0	Hills, Tundra	Rocketry
Needed for… Modern Armor, Radar Artillery, Cruise Missile, AEGIS Cruiser, Jet Fighter, F-15, all stealth planes, all nukes, *Apollo Program, SAM Missile Battery*			
Coal	0.2.1	Jungle, Hills, Mountains	Steam Power
Needed for… Ironclad, *Coal Plant, Iron Works, Railroads*			
Horses	0.0.1	Grasslands, Plains, Hills	The Wheel
Needed for… Chariot, War Chariot, Three Man Chariot, Horseman, Mounted Warrior, Knight, Rider, Ansar Warrior, Keshik, Conquistador, Cavalry, Cossack, Sipahi			
Iron	0.1.0	Hills, Mountains	Iron Working
Needed for… Swordsman, Legionary, Immortal, Gallic Swordsman, Pikeman, Swiss Mercenary, Medieval Infantry, Knight, Samurai, Rider, Ansar Warrior, Cannon, Privateer, Frigate, Man-O-War, Ironclad, *Coastal Fortress, Factory, Iron Works, Railroads*			
Oil	0.1.2	Desert, Tundra, Marsh	Refining
Needed for… Paratroopers, Mech Infantry, all tanks, Transport, Carrier, Submarine, Destroyer, Cruiser, Battleship, all air units			
Rubber	0.0.2	Forest, Jungle, Marsh	Replaceable Parts
Needed for… Infantry, Paratrooper, Marines, Mech Infantry, all tanks, Helicopter, *Mass Transit*			
Saltpeter	0.0.1	Desert, Hills, Mountains	Gunpowder
Needed for… Musketman, Musketeer, Cavalry, Cossack, Sipahi, Cannon, Hwach'a, Privateer, Frigate, Man-O-War, *Coastal Fortress*			
Uranium	0.2.3	Forest, Mountains	Fission
Needed for… Nuclear Sub, AEGIS Cruiser, Tactical Nuke, ICBM, *Nuclear Plant, Manhattan Project*			

Luxury

	F.S.C	Terrain
Dyes	0.0.1	Forest, Jungle
Ivory	0.0.2	Plains, Forest
Furs	0.1.1	Tundra, Forest
Gems	0.0.4	Jungle, Mountains
Incense	0.0.1	Desert, Hills
Silk	0.0.3	Forest, Jungle
Spice	0.0.2	Forest, Jungle
Wines	1.0.1	Grasslands, Plains, Hills

Bonus

	F.S.C	Terrain
Cattle	2.1.0	Grasslands, Plains, Marsh
Fish	2.0.1	Coast, Sea, Marsh
Fruit	1.0.1	Jungle
Game	2.0.0	Tundra, Forest
Gold	0.0.4	Hills, Mountains
Oasis	2.0.0	Desert
Sugar	1.0.1	Plains, Hills
Tobacco	0.0.1	Grasslands, Hills
Whales	1.1.2	Sea
Wheat	2.0.0	Flood Plains, Grasslands, Plains

Governments

		Military Police Limit	Corruption and Waste	Production Bonus/Penalty	Hurry Method	Free Units	Draft Limit	War Weariness	Other
	Anarchy	0	catastrophic	only food is produced, -1 in squares with 3 food or more	none	all units are free	0	none	Workers 50% slower, no upkeep on improvements
	Despotism	2	rampant	-1 in squares with 3 or more food, shields or commerce	forced labor	4 per town 4 per city 4 per metropolis	2	none	
	Feudalism	3	problematic		forced labor	5 per town 2 per city 1 per metropolis	2	low	Units cost 3
	Monarchy	3	problematic		paid labor	2 per town 4 per city 8 per metropolis	2	none	
	Communism	4	communal		forced labor	6 per town 6 per city 6 per metropolis	2	none	Veteran spies
	Fascism	4	nuisance		forced labor	4 per town 7 per city 10 per metropolis	2	none	Workers 100% faster, Veteran spies, Deportation, Xenophobia
	Republic	0	nuisance	+1 commerce in squares already producing commerce	paid labor	1 per town 3 per city 4 per metropolis	1	low	Units cost 2
	Democracy	0	minimal	+1 commerce in squares already producing commerce	paid labor	none	1	high	Workers 50% faster, cities immune to propaganda

Civ-Specific Abilities
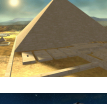
	Characteristics	Start with	Remarks
Agricultural	+1 food on base city square. Extra food on irrigated desert. Aqueduct, Recycling Plant, Solar Plant are cheaper.	Pottery	Masonry, for the Inca
Commercial	Large cities produce extra commerce. Levels of corruption are lower.	Alphabet	
Expansionist	Can build Scouts, start with one Scout. Barbarian villages are more lucrative.	Pottery	
Industrious	Large cities produce extra shields. Workers complete jobs faster.	Masonry	
Militaristic	Military improvements are cheaper. Units promoted more often.	Warrior Code	The Wheel, for Japanese
Religious	Religious improvements are cheaper. No anarchy between governments.	Ceremonial Burial	
Scientific	Scientific improvements are cheaper. One free advance at start of each era.	Bronze Working	
Seafaring	Water based improvements are cheaper. Bonus commerce in coastal cities. Ships move faster. Reduced chance of sinking.	Alphabet	Pottery, for the English
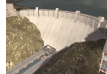
Civilizations

	Agricultural	Seafaring	Scientific	Religious	Militaristic	Industrious	Expansionist
Commercial	Iroquois	English	Greek, Korean	Indian	Roman	French	Hittite
Expansionist	Inca	Portuguese	Russian	Arabian	Mongol, Zulu	American	
Industrious	Maya	Carthaginian	Ottoman, Persian	Egyptian	Chinese		
Militaristic	Aztec	Viking	German	Japanese			
Religious	Celtic	Spanish	Babylonian				
Scientific	Sumerian	Byzantine					
Seafaring	Dutch						

Great Wonders
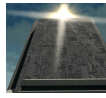
Name - Cost - Culture	Charact.	Requires
Colossus - 200 - 3 +1 commerce in squares producing commerce	Expansionist, Seafaring, Commercial	Bronze Working 📷 Obsolete after *Flight*
Statue of Zeus - 200 - 4 produces Ancient Cavalry every 5 turns	Militaristic, Religious	Mathematics, *Ivory* 📷 Obsolete after *Metallurgy*
Mausoleum of Mausollos - 200 - 2 makes 3 content citizens in city where it is built	Scientific, Seafaring	Philosophy 📷
Great Wall - 300 - 2 City Wall in every city on continent, doubles combat vs. Barbarians	Militaristic, Industrious	Construction 📷 Obsolete after *Metallurgy*
Oracle - 300 - 4 doubles effects of Temples	Religious	Mysticism 📷 Obsolete after *Theology*
Hanging Gardens - 300 - 4 3 content citizens, 1 content in all other cities	Industrious, Agricultural	Monarchy 📷 Obsolete after *Steam Power*
Lighthouse - 300 - 2 +1 ship movement, Galleys travel safely at sea	Expansionist, Seafaring, Commercial	Map Making 📷 Obsolete after *Magnetism*
Knights Templar - 300 - 2 produces Crusader every 5 turns	Militaristic, Religious	Chivalry Obsolete after *Steam Power*
Great Library - 400 - 6 gives advances that two other Civilizations have	Scientific	Literature 📷 Obsolete after *Education*
Pyramids - 400 - 4 Granary in every city on continent	Industrious, Religious, Agricultural	Masonry 📷
Copernicus' Observatory - 400 - 4 doubles science output of city	Expansionist	Astronomy 📷
Magellan's Voyage - 400 - 3 +1 ship movement	Expansionist, Commercial, Seafaring	Navigation
Newton's University - 400 - 6 doubles science output of city	Scientific	Theory of Gravity 📷
Shakespeare's Theater - 400 - 8 makes 8 content citizens in city where it is built		Free Artistry 📷
Temple of Artemis - 500 - 4 Temple in every city on continent	Religious	Polytheism 📷 Obsolete after *Education*
Sun Tzu's Art of War - 600 - 2 Barracks in every city on continent	Militaristic	Feudalism
Smith's Trading Company - 600 - 3 pays upkeep for Harbors, Marketplaces, Banks and Airports	Commercial, Seafaring	Economics
J.S. Bach's Cathedral - 600 - 6 makes 2 content citizens in all cities	Religious	Music Theory 📷
Leonardo's Workshop - 600 - 2 halves unit upgrade costs	Militaristic	Invention 📷
Sistine Chapel - 600 - 6 doubles effects of Cathedrals	Religious	Theology 📷
Theory of Evolution - 600 - 3 two free civilization advances	Scientific	Scientific Method
Hoover Dam - 800 - 2 Hydro Plant in every city on continent	Industrious, Agricultural	Electronics 📷

Great Wonders - continued

Name - Cost - Culture	Charact.	Requires
Universal Sufferage - 800 - 4 reduces war weariness in all cities	Agricultural	Industrialization
Manhattan Project - 800 - 2 allows construction of nuclear weapons by all Civilizations	Militaristic, Industrious	Fission, *Uranium*
United Nations - 1000 - 4 allows diplomatic victory	Commercial	Fission
Cure for Cancer - 1000 - 3 makes 1 content citizen in all cities	Scientific, Agricultural	Genetics

Name - Cost - Culture	Charact.	Requires
Longevity - 1000 - 3 cities grow by 2 citizens when the food storage box fills	Scientific	Genetics
SETI Program - 1000 - 3 doubles science output of city	Expansionist	Computers
The Internet - 1000 - 4 Research Lab in every city on continent	All	Miniaturization

Small Wonders

Name - Cost - Culture	Requires
Heroic Epic - 200 - 4 increases likelihood of leaders appearing after victory	victorious army
Iron Works - 300 - 2 doubles shield output in city, causes pollution (4)	*Coal* and *Iron* in city radius
Forbidden Palace - 200 - 2 lowers corruption as if it were a second capital	8 cities on a standard map
Secret Police HQ - 200 - 0 allows espionage missions	Espionage, *Communist government*
Wall Street - 300 - 2 earn 5% interest on treasury each turn (maximum of 50)	5 Stock Exchanges
Military Academy - 400 - 1 can build armies in city without a leader	Military Tradition, victorious army

Name - Cost - Culture	Requires
Pentagon - 400 - 1 armies can contain an extra unit	3 armies in the field
Intelligence Agency - 400 - 1 allows espionage missions	Espionage
Apollo Program - 500 - 2 allows spaceship construction	Space Flight, *Aluminum*
Strategic Missile Defense - 500 - 1 75% chance of intercepting ICBM attacks	5 SAM Missile Batteries
Battlefield Medicine - 500 - 1 military units can heal in enemy territory	5 Hospitals

City Improvements

(☠: Pollution)

Name	Cost	Upkeep	Culture	☠	Requires	Effect
Airport	160	2		1	Flight	produces veteran air units, trading hub, causes pollution
Aqueduct	100	1			Construction	allows population growth past size 6, for cities with no access to fresh water
Bank	160	1			Banking	50% increase to tax revenue
Barracks	40	1				produces veteran ground units
Cathedral	160	2	3		Monotheism	makes 3 content citizens
City Walls	20				Masonry	+50% against land attacks, defends against artillery bombardment, not needed past size 6
Civil Defence	120	1			Radio	+50% to defending units
Coal Plant	160	3		2	Industrialization, *Coal*	increases factory output by 50%, causes pollution
Coastal Fortress	40				Metallurgy, *Iron*, *Saltpeter*	+50% against naval attacks, defends against naval bombardment, and attacks enemy ships
Colosseum	120	2	2		Construction	makes 2 content citizens
Commercial Dock	160	2		1	Mass Production	increases trade in every water square within the city's radius, causes pollution
Courthouse	80	1			Code of Laws	reduces corruption, reduces effect of propoganda against city
Factory	240	3		2	Industrialization, *Iron*	50% increase to production, causes pollution
Granary	60	1			Pottery	halves food storage required for population growth
Harbor	60	1			Map Making	+1 food from coast, sea and ocean squares, produces veteran sea units, trading hub
Hospital	160	2			Sanitation	allows population growth past size 12
Hydro Plant	240	3			Electronics	increases factory output by 50%, requires a river, makes no pollution
Library	80	1	3		Literature	50% increase to science output
Manufacturing Plant	320	3		2	Robotics	50% increase to production, causes pollution
Marketplace	100	1			Currency	50% increase to tax revenue, increases effect of luxury resources
Mass Transit	200	2			Ecology, *Rubber*	reduces pollution from population
Nuclear Plant	240	3			Nuclear Power, *Uranium*	increases factory output by 150%, reduces pollution, requires fresh water, chance of meltdown
Offshore Platform	240	3		2	Miniaturization	+1 shield from coast, sea and ocean squares, causes pollution
Palace	varies		1		Masonry	center of civilization
Police Station	160	2			Communism	reduces war weariness, reduces corruption
Recycling Plant	200	2			Recycling	reduces pollution from production
Research Lab	200	2	2	1	Computers	50% increase to science output, causes pollution
SAM Missile Battery	80	2			Rocketry, *Aluminum*	defends against air bombardment
Solar Plant	320	3			Ecology	increases factory output by 50%, makes no pollution
Stock Exchange	200	3			The Corporation	50% increase to tax revenue
Temple	60	1	2		Ceremonial Burial	makes 1 content citizen
University	200	2	4		Education	50% increase to science output

Ancient Times

Bronze Working
Spearman 1.2.1
Impi 1.2.2
Hoplite 1.3.1
Numidian Mercenary 2.3.1
The Colossus c3 (E,C,Se)

Iron Working
Swordsman 3.2.1
Legionary 3.3.1
Immortal 4.2.1
Gallic Swordsman 3.2.2
Resource: Iron

Construction
Aqueduct u1 c0
Colosseum u2 c2
The Great Wall c2 (M,I)
build fortress

Masonry
Palace u0 c1
City Walls u0 c0
Pyramids c4 (I,R,A)
build outpost

Mathematics
Catapult 4.1.1
Statue of Zeus c4 (M,R)
Ancient Cavalry 3.2.2 +1 HP

Currency
Marketplace u1 c0

Alphabet
Curragh 1.1.2

Philosophy
Mausoleum c2 (S, Se)

The Republic*
new government

Writing
establish embassies
alliances

Code of Laws
Courthouse u1 c0

Pottery
Granary u1 c0

Literature*
Library u1 c3
The Great Library c6 (S)

The Wheel
Chariot 1.1.2
War Chariot 2.1.2
Three Man Chariot 2.2.2
Resource: Horses

Horseback Riding
Horseman 2.1.2
Mounted Warrior 3.1.2

Map Making
Galley 1.1.3 - 2
Dromon 2.1.3 - 2
Harbor u1 c0
The Lighthouse c2 (E,C,Se)
right of passage

Warrior Code
Archer 2.1.1
Bowman 2.2.1
Jaguar Warrior 1.1.2
Javelin Thrower 2.2.1

Ceremonial Burial
Temple u1 c2

Mysticism
The Oracle c4 (R)

Polytheism
Temple of Artemis c4 (R)

Monarchy*
Hanging Gardens c4 (I)
new government

Ground Units attack.defend.move   **u** is upkeep per turn   * optional advance
Artillery Units bombard.range.firing rate   **c** is culture per turn
Naval Transports attack.defend.move - carrying capacity   **( )** is wonder characteristics

Middle Ages

Monotheism
Cathedral u2 c3

Theology
Sistine Chapel c6 (R)
The Oracle is obsolete

Printing Press*
communication trading

Democracy*
new government

Education
University u2 c4
Great Library is obsolete
Temple of Artemis is obsolete

Banking
Bank u1 c0

Free Artistry*
Shakespeare's Theater c8

Music Theory*
J.S. Bach's Cathedral c6 (R)

Economics*
Smith's Trading Co. c3 (C)
doubles effect of wealth

Chivalry*
Knight 4.3.2
Rider 4.3.3
Ansar Warrior 4.2.3
Keshik 4.2.2+
Samurai 4.4.2
War Elephant 4.3.2 +1 HP
Knights Templar c2 (M, R)
Crusader 5.3.1

Astronomy
Explorer 0.0.2
Conquistador 3.2.2
Caravel 1.2.4 - 3
Carrack 2.2.4 - 3
Copernicus' Observatory c4 (E)
trade over sea squares

Navigation*
Magellan's Voyage c3 (E,C, Se)
trade over ocean squares
trade world maps

Feudalism
Pikeman 1.3.1
Medieval Infantry 4.2.1
Swiss Mercenary 1.4.1
Sun Tzu's Art of War c2 (M)
new government

Physics

Theory of Gravity
Newton's University c6 (S)

Magnetism
Galleon 1.2.4 - 4
Privateer 2.1.5
Frigate 2.2.5 / 3.1.2
Man-O-War 4.2.5 / 4.1.2
The Lighthouse is obsolete
trade over ocean squares

Invention
Longbowman 4.1.1
Berserk 6.2.1
Leonardo's Workshop c2 (M)

Chemistry

Engineering
Trebuchet 6.1.1
plant forest
road movement across rivers

Gunpowder
Musketman 2.4.1
Musketeer 2.5.1
Resource: Saltpeter

Metallurgy
Cannon 8.1.1
Hwach'a 8.1.1
Coastal Fortress u0 c0
The Great Wall is obsolete
Statue of Zeus is obsolete

Military Tradition*
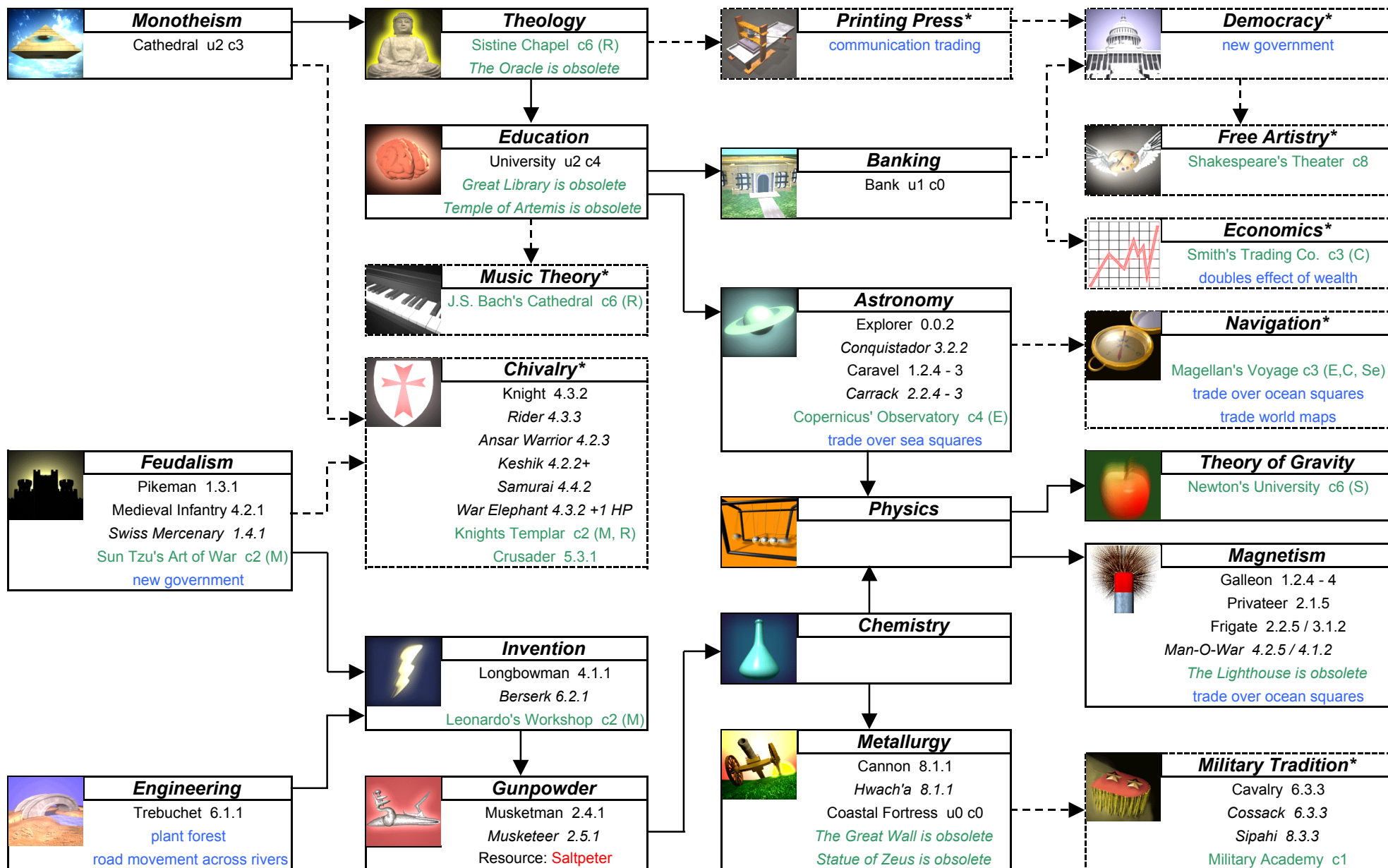Cavalry 6.3.3
Cossack 6.3.3
Sipahi 8.3.3
Military Academy c1

Ground Units attack.defend.move
Artillery Units bombard.range.firing rate
Naval Transports attack.defend.move - carrying capacity
Naval Units attack.defend.move / bombard.range.firing rate

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( ) is wonder characteristics

Industrial Ages

**Nationalism*

Rifleman 4.6.1
mobilize for war
draft units
police officers
protection pact, embargoes

Communism*

Police Station u1 c0
new government

Refining

Resource: Oil

Flight

Fighter 4.2.6 / 3.0.1
Bomber 0.2.10 / 12.0.3
Flak 1.6.1 aa2
Airport u2 c0
build airfield
The Colossus is obsolete

Fascism*

new government

Espionage*

Intelligence Agency c1
Secret Police HQ c0

Combustion

Transport 1.2.6 - 6
Destroyer 12.8.8 / 6.1.2
Cruiser 15.10.6 / 7.1.2

Advanced Flight*

Paratrooper 4.9.1
Helicopter 0.2 / 0.6.0 - 3

Steam Power

Iron Works c2
Resource: Coal
build railroad
Hanging Gardens is obsolete
Knights Templar is obsolete

Industrialization

Coal Plant u3 c0
Factory u3 c0
Universal Suffrage c4 (A)

Steel

Amphibious War.*

Marines 12.6.1

The Corporation

Stock Exchange u3 c0
Wall Street c5

Replaceable Parts

Infantry 6.10.1
Artillery 12.2.2
Guerilla 6.6.1
Resource: Rubber
doubles speed of workers
civil engineers

Mass Production

Carrier 1.8.7 - 4
Submarine 8.4.4
Battleship 18.12.5 / 8.2.2
Commercial Dock u2 c0

Ironclads*

Ironclad 5.6.3 / 6.1.2

Electricity

irrigate without fresh water

Scientific Method

Theory of Evolution c3 (S)

Atomic Theory

Motor. Transport.

Tank 16.8.2
Panzer 16.8.3

Medicine

Sanitation*

Hospital u2 c0
Battlefield Medicine c1

Electronics

Hydro Plant u3 c0
Hoover Dam c2 (I)

Radio

Civil Defence u1 c0
build radar tower

Ground Units attack.defend.move
Artillery Units bombard.range.firing rate
Naval Transports attack.defend.move - carrying capacity
Naval Units attack.defend.move / bombard.range.firing rate
Air Units attack.defend.move / bombard.range.firing rate

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( ) is wonder characteristics

aa Anti-Aircraft

Modern Times

Ecology
Mass Transit u2 c0
Solar Plant u3 c0

Synthetic Fibers
Modern Armor 24.16.3
Modern Paratrooper 6.11.1
SS Exterior Casing
SS Storage/Supply

Stealth
Stealth Bomber 0.5.16 / 18.0.3
Stealth Fighter 8.6.12 / 6.0.2

Recycling
Recycling Plant u2 c0

Superconductor
SS Fuel Cells
SS Life Support

Rocketry
Jet Fighter 8.4.9 / 3.0.1
F-15 8.4.9 / 6.0.2
Cruise Missile 16.4.3
TOW Infantry 12.14.1
Mobile SAM 1.6.2 aa4
SAM Missile Battery u2 c0
Resource: Aluminum

Space Flight
Tactical Nuke
Apollo Program c2
SS Cockpit
SS Docking Bay
SS Engine

Satellites
ICBM
SS Thrusters
map revealed

Integrated Defense
Strategic Missile Defense c1

Fission
Nuclear Sub 8.4.5 - 1
Manhattan Project c2 (M,I)
United Nations c4 (C)
Resource: Uranium

Nuclear Power
Nuclear Plant u3 c0

Smart Weapons
precision bombing

The Laser
SS Party Lounge

Robotics
AEGIS Cruiser 15.10.7 / 6.2.2
Radar Artillery 16.2.2
Manufacturing Plant u3 c0
SS Stasis Chamber

Computers
Mech Infantry 12.18.2
Research Lab u2 c2
SETI Program c3 (E)

Miniaturization
Offshore Platform u3 c0
The Internet c4 (all)

Genetics
Cure for Cancer c3 (S)
Longevity c3 (S)

Ground Units attack.defend.move
Artillery Units bombard.range.firing rate
Naval Transports attack.defend.move - carrying capacity
Naval Units attack.defend.move / bombard.range.firing rate
Air Units attack.defend.move / bombard.range.firing rate

u is upkeep per turn
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