

Civilization III:
Digital Game-Based Learning and Macrohistory Simulations

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Introduction: Implications of a Gaming Phenomenon

Sid Meier's macrohistorical simulation *Civilization III* was *the* gaming event of 2001. The latest edition in a best-selling series, *Civilization III* received unanimously positive reviews from the gaming press. Meanwhile, the public was entranced by the gaming objective of guiding an historical civilization's evolution from 4000 B.C. to the contemporary era.

Game designers Jeff Briggs and Soren Johnson had responded to criticisms of earlier editions (Friedman, 1998) by expanding game-play options. Gamers could now achieve victory by cultural, diplomatic, geopolitical and space-race means, rather than by brute military force. The graphic user interface had been revamped, rules deepened and the artificial intelligence engine (the true heart of the game) rendered more complex. Meier has been elevated in the process to the pantheon of *auteur* designers (Prensky, 2000: 132).

Civilization III's success amplifies certain trajectories of our mediascape, evident since *SimCity* (1988) inaugurated the "God game" genre (Prensky, 2000: 139). Sony's Playstation 2 has replaced *The New Yorker* as the arbiter of the Gen-X/Millennials psyche (Seabrook, 2000). Alain and Frederic Le Diberder touted videogames as "the 'tenth art'" (Poole, 2000: 25). Simulations are now regularly used in interactive education (Beer, 2000: 297-298) and business training (Prensky, 2000: 146), anticipating how corporations harness simulations to accelerate strategic innovation processes (Schrage, 1999). Hollywood films and DVD packaging feature twitch-speed aesthetics and non-linear narratives. Open-ended game-play provides a laboratory that enables participants to test the geopolitical shibboleths of the post-9/11 world—Samuel P. Huntington's "clash of civilizations" hypothesis, Robert Kaplan's fears of a "coming anarchy", the "Pacific Age" and "China Century" scenarios—and to surface their hidden presumptions. Simulations also help to distinguish between *core operating policies* versus *espoused policies* that guide organizational behaviour (Georgantzias and Acar, 1995: 234).

These trajectories suggest that macrohistory and problem-oriented futures may infiltrate the public consciousness through the vector of digital media. This cultural diffusion can be differentiated by Richard Slaughter's four-level model of futures research (Slaughter, 1999: 145-146). Underlying the success of simulation games (the "pop" layer) are the post-World War II legacy of cybernetics and systems sciences (Georgantzias and Acar, 1995:194-196), environmental crises and historical wild-cards (the "problem-oriented" layer) and the emergence of dynamical historiography (Abraham, 1994: 8; De Landa, 1998), cultural transformation theory (Eisler, 1987) and the post-positivist revolt (the "critical"/"epistemological" layers).

In a promotional video, the production team emphasized how hours of immersive game-playing had honed *Civilization III*. How realistic is its depiction of cultural evolution and macrohistory? If cybernetics and systems sciences underpin knowledge capitalism, what does *Civilization III* suggest about their legacy? And is digital game-based learning a viable tool for "screenagers" or just Internet-driven marketing hype?

Method: World Domination . . . Eventually

I explored these questions during industry research and sixty hours of game-play. I tested various models, including Cultural Diffusion (Jared Diamond), the “Dominator/Partnership” paradigm (Riane Eisler), the Group Selection hypothesis (Howard Bloom), and civilization-driven Game Theory (Robert Wright) as explicit tactics and strategies. While subjective, these findings hopefully suggest the potential of combining “pop” tools with the depth of “critical”/“epistemological” frameworks. Insights may be applied by Firaxis and Infogrames Interactive developers for future updates, or by the growing network of gamers who create “mods” (Au, 2002; Prensky, 2000: 268), or new features and module scenarios, for other players. For decades Hollywood has engaged researchers and specialists to hone film depictions of historical events. Now it’s time for academics and cultural scholars to embrace gaming companies and co-develop the next generation of digital game-based simulations.

Historical Precursors: Computer Simulations, Cybernetics and Systems Sciences

Stephen Poole contended that the genesis of turn-based and real-time strategy games was the Egyptian game Mancala. Strategy games emerged when societies grew in complexity and needed the modelling of diplomacy and strategic warfare (Poole, 2000: 175). The post-World War II focus on nation-building and strategic planning influenced the growth of cybernetics and systems sciences as a technocratic tool. Notably, the RAND Institute and Herman Kahn extended planning techniques from “predict-and-control” planning to “most-likely” scenario modelling. (van der Heijden, 1996: 15).

The first computer God game of the contemporary era was “Hammurabi . . . a direct ancestor of Civilization.” (Poole, 2000: 32). Computer simulations for astronautics training (Schwartz, 1991: 200), crisis management (van der Heijden, 1996: 221), geopolitics, and futures research by Jay Forrester (urban dynamics), Buckminster Fuller (world resources) and others became prominent in the late 1960s. Donella and Dennis Meadows’ *Limits to Growth* scenarios, published by the Club of Rome in 1973, brought computer simulations of the *global problematique* into the public arena. This knowledge base laid the groundwork for current initiatives including the World Game and the Spaceship Earth model.

The *SimCity* and the *Civilization* series thus “demonstrate the interconnectivity of our political, social, and economic world.” (Rushkoff, 1994: 183). Their 1990s popularity mirrors the “intimate closeness” (Schwartz, 1991: 222) of global media and travel vectors (Beck & Cowan, 1996: 68). Yet the ideological contours of this “interconnectivity agenda” have been shaped by other models. *Civilization* draws upon Jean Piaget’s constructivist learning, based on discovery and experimenting with artefacts (Prensky, 2000: 162). The *Civilization* series avoids the role of diasporas, colonization and genocide in shaping cultural history, stresses scientific determinism, and upholds nation-states as the primary type of geopolitical organization (Friedman, 1998).

The omniscient Deity-perspective of God games depersonalizes violence (Friedman, 1998) and “the effects of idiosyncratic individual people” (Diamond, 1997: 419) on the historical process. The *epistemic* roots of God games may be Norbert Wiener’s cybernetic model of information processing, Forrester’s systems thinking and artificial intelligence research. This Deity-perspective, especially in the Monte Cristo business simulations (Prensky, 2000: 220), anticipated Henry Mintzberg’s criticism of strategic planning as a disconnected tool used for political control within organizations (Mintzberg, 1994). In God games, timing and resource control becomes crucial for success (Poole, 2000: 200).

Military domination strategies in *Civilization* (1991) and *Civilization II* (1996) highlighted the conceptual influence of turn-based “wargaming” simulations. One futurist think-tank has warned about the growth of the Military-Nintendo Complex (Naisbitt, Naisbitt, and Philips, 1999). Its oft-cited genesis was when the US Defense Department’s Advanced Research Projects Agency commissioned Atari in 1978 to build a version of *Battlezone* “as a simulator for real tank drivers.” (Poole, 2000: 219; Prensky, 2000: 300). Marine fire-teams have been trained using *Marine Doom*, a special adaptation of id Software’s *Doom* (Prensky, 2000: 319). *Tom Clancy’s Rogue Spear* (2001) is the latest commercial off-the-shelf game to be adapted for training in urban counter-terrorist strategies and non-lethal weapons.

Commercial gaming simulations focus on entertainment, whereas military simulations emphasize realism and engagement (Prensky, 2000: 213). Trainers differentiate between “low-fidelity” simulations that are simplified encounters and “high-fidelity” simulations that model realistic situations (Prensky, 2000: 214). Computer gaming simulations are increasingly found at the “high-fidelity” end of the spectrum (Poole, 2000: 41), while ex-defence staff are hired by commercial firms to create off-the-shelf games (Prensky, 2000: 298). Since 1996 the Department of Defense’s Defense Modelling and Simulation Office has held joint military-civilian seminars to enhance cooperation between the defence and entertainment industries (Prensky, 2000: 315). The Military-Nintendo scenario, where “techno-military thrills” (Delgado, 1996) infect their host society through adaptive computer games, has already surpassed future shock to become future fact.

The Rise of World Systems and the Power of Counterfactuals

Computer scenarios and simulations “reveal transformation rules and social interaction paths that were not previously thought of.” (Georgantzas and Acar, 1995: 234). Simulations can draw on historical events and processes as hindsight (Schwartz, 1991: 168). When constructing a game’s narrative, programmers turn, like scenario planners, to “driving forces, the forces that influence the outcome of events” (Schwartz, 1991: 106) and detailing the contextual and transactional environments (van der Heijden, 1996: 6). Like scenarios, gaming “is a story, a narrative that links historical and present events with hypothetical events taking place in the future.” (van der Heijden, 1996: 213). What are *Civilization III*’s roots in historical research?

The world of *Civilization III* is indebted to William McNeill’s landmark book *The Rise of the West* (1963), which influenced a generation of historians. Unlike definitions of ‘civilization’ as geographical space, cultural homogeneity or developmental stage (Fernandez-Armesto, 2000: 3-4), McNeill emphasized how

social change was driven by the exchange of knowledge bases and new skill-sets between different groups (McNeill, 1990). But he later re-evaluated his definition: “The book is flawed simply because it assumes that discernibly separate civilizations were the autonomous social entities whose interactions defined history on a global scale.” (McNeill, 1990: 7-8).

For Robert Wright, the problem was that we viewed unfolding civilizations through a zoom lens rather than long focus: “As the centuries fly by, civilizations may come and go, but civilization flourishes, growing in scope and complexity.” (Wright, 2000: 108). Wright’s insight explains why God games remain an attractive genre: “Time can be sped up or slowed down at will, and interactions of data over time can be readily visualised.” (Poole, 2000: 48-49). The flexibility of this time-sense underpins our collective social imaging of possible, probable and preferable futures. And we also judge the prospects of a civilization “by the confidence with which it builds for the future.” (Fernandez-Armesto, 2000: 442).

Its open-ended game-play and the abilities to play different civilizations against up to fifteen AI opponents, or more in CivNet (the on-line multiplayer version), redeems *Civilization III* from the narrow focus on the ‘European Miracle’ (Wright, 2000: 156) and classical Judeo-Christian civilization (Clarke, 1969; Fernandez-Armesto, 2000: 8-9). The game becomes a tool for alternate scenarios and stimulating counterfactual thinking, “the domain of Hollywood science fiction films and speculative novels.” (Ferguson, 1997: 2-3). If used in a scenarios workshop, *Civilization III* becomes a brainstorming tool for the historical analysis of key variables (van der Heijden, 1996: 138, 189).

Through customizing the game’s intelligence agents (which track resource flows, cultural evolution and population growth) and the Game Editor (which defines the simulation world), the player can experiment with different thinking styles, from conditionals and counterfactuals to theoretical speculations and predictive hypotheses (Bell, vol. 1, 1999: 179). The flexibility of *Civilization III*’s environment counteracts the criticism of alternative scenarios—“that there is no limit to the number which we can consider”—by becoming an intelligence augmentation tool that challenges prevailing thinking (Ferguson, 1997: 83).

While geopolitical analysts currently emphasize the threat to Western culture of the Sinic and Islam civilizations (Huntington, 1996), *Civilization III*’s world lies somewhere between Fernand Braudel and Immanuel Wallerstein in suggesting that this scenario did not *have to* eventuate (Galtung and Inayatullah, 1997: 169). One recent science fiction novel (Robinson, 2002) depicts a world where Judeo-Christian Europe did not come to pass, but was surpassed by Sinic and Islam civilizations (Wright, 2000: 189). Games like *Civilization III*, like popular media and speculative fiction, may therefore have a role in mediating a critical barrier of the 21st century: our socially-constructed values and stereotypes of the Other.

The Birth of Dynamical Historiography

The ability of God games to manipulate time, stimulate counterfactual thinking and augment our multiple intelligences has occurred in the midst of a tectonic shift within historiography.

The pre-World War II era was largely defined by Oswald Spengler's neobiological rise-fall and Arnold Toynbee's comparative model (Fernandez-Armesto, 2000: 10-11). During the Cold War, historiography became a battleground between rival theorists—notably Samuel P. Huntington, Eric Hobsbawm and Fernand Braudel—for the 'hearts and minds' of the populace. The term civilization became a propaganda weapon (Fernandez-Armesto, 2000: 2) that defined the economic system, class structure, division of labour and historical systems most favourable to its proponents. Lay explanations defined civilizations in terms of literacy or having reached the level of nation-states (Wright, 2000: 92, 93). The post-Cold War period has witnessed the rise-and-fall of postmodern cultural relativists, the emergence of critical realism, and at least five conflicting "pop" applications of historiography to current geopolitical problems. Socio-biology has prompted some scholars to define civilizations by their human adaptiveness to natural ecosystems and environmental contingencies (Fernandez-Armesto, 2000: 24-25).

The most promising new school of historiography to emerge may be *dynamical historiography*. Niall Ferguson dubs this school 'chaostory': "a chaotic approach to history." (Ferguson, 1997: 89). Ralph Abraham defines dynamical historiography as "the application of dynamical systems concepts and models to history," and observes that "social evolution is a dynamic process: cultures are born in profusion, develop variously, submit to selection processes, and die." (Abraham, 1994: 8). Manuel De Landa acknowledges the influence of Ilya Prigogine (thermodynamics) and Arthur Iberall (physics) on chaos historians (De Landa, 1997: 14-15; Eisler, 1987: 129). This new approach came into vogue with breakthroughs in abstract mathematical models, computer simulations, and evocative computer graphics (Abraham, 1994: 59). It may also be a bulwark against determinist theories of history, which become powerful "when people believe in them and believe themselves to be in their grip." (Ferguson, 1997: 88).

Dynamical historiography shifts from a linear to a nonlinear worldview, from equilibrium to non-equilibrium states, from leaders and nation-states to flows and vectors. Since the material world and human consciousness are influenced by non-linear as well as linear laws, the stochastic effects of dynamical historiography renders "the search for universal laws of history . . . futile." (Ferguson, 1997: 89; Wright, 2000: 196). Civilizations are redefined in the context of *morphogenesis* ("the pattern-formation process of history") as a *vibratory field* ("a group of oscillators") that evolves towards coherence, cooperation and self-resonance." (Abraham, 1994: 17). Chaos historians also acknowledge the complexity of different cognitive maps, cultural symbols and the vagueness of history. (Abraham, 1994: 21).

Dynamical Historiography, Macrohistory and *Civilization III*

Despite popular misunderstandings about chaos theory, dynamical historiography offers both futures studies and game designers a powerful tool to interrogate the "social psychological, political, economic, social, or cultural implications" (Bell, vol. 1, 1997: 182) of simulation worlds and scenarios. Embedding the design of games like *Civilization III* within a "critical"/"epistemological" framework can counteract the blind-spots and defects inherent in the world-building philosophy of many programmers, which model specific aspects of reality but caricature others (Poole,

2000: 61). For Sohail Inayatullah, “epistemological boundaries—languages, structures, and practices—define the significant and the trivial, the negotiable and immutable, and the real.” (Galtung and Inayatullah, 1997: 163). So how significant or trivial is *Civilization III*?

While the God game perspective of *Civilization III* erases the ‘mutant’ individual from history, its artificial intelligence engine can model when “a single, often trivial change, has momentous consequences.” (Ferguson, 1997: 12). This reflects geopolitical history: a single decision during China’s Ming dynasty to pursue an isolationist policy changed the world system’s trajectory and technological flows (Wright, 2000: 163-164; Fernandez-Armesto, 2000: 265).

Another extremely useful epistemological lens to study *Civilization III* is macrohistory: “the study of histories of social systems, along separate trajectories, in search of patterns.” (Galtung and Inayatullah, 1997: 1). Its nomothetic focus (Galtung and Inayatullah, 1997: 2-3) counterpoints William McNeil’s influence. In principle the God game perspective that upholds societies over the individual (Galtung and Inayatullah, 1997: 175), time as the unit of analysis (Galtung and Inayatullah, 1997: 182), and the ability to study macro-processes across time-space (Galtung and Inayatullah, 1997: 167) should be a ‘core competence’ of games like *Civilization III*. The reality is different.

Civilization III does not overtly implement insights from macrohistory but by understanding the perspectives of individual macrohistorians, we can develop a useful critique of its game-play. The game’s model draws upon many historical precursors, including Adam Smith’s progression from agricultural to exchange economies (Galtung and Inayatullah, 1997: 42-43), Auguste Comte’s positivistic society (Galtung and Inayatullah, 1997: 57), Karl Marx’s techno-economic superstructure (Galtung and Inayatullah, 1997: 62), Herbert Spencer’s social stages (Galtung and Inayatullah, 1997: 72-73), Vilfredo Pareto’s degeneration of elites (Galtung and Inayatullah, 1997: 80), the player as a Weberian charismatic leader (Galtung and Inayatullah, 1997: 87), and Oswald Spengler’s cultural lifecycle (Galtung and Inayatullah, 1997: 100-101). Each perspective has its epistemological insights, biases and blind-spots. Therefore it’s unfortunate that *Civilization III*’s AI engine does not draw on this macrohistorical knowledge base and key factors (Galtung and Inayatullah, 1997: 161) more effectively. Perhaps this is a sign that Meier and his design team are caught in the cultural transition from Prabhat Rainjan Sarker’s vipra (intellectual) to vaeshya (capitalist) mode (Galtung and Inayatullah, 1997: 135). Spengler might have contended that games like *Civilization III* personified the stifling inwardness of declining ‘civilization’ elites (Galtung and Inayatullah, 1997: 239).

Often the player is forced into the “grab-what-you-can mentality” that Pitirim Sorokin warned against (Galtung and Inayatullah, 1997: 117). Economic cycles and political crises created the cultural homogeneity critiqued by Antonio Gramsci (Galtung and Inayatullah, 1997: 130). Yet this dynamic, which is closer to biological and cyclical models than linear ones, also captures Spengler’s central insight that “there are many cultures, each with their own patterns within a general overall pattern—birth, growth, decay, and death.” (Galtung and Inayatullah, 1997: 180). The player’s leadership skill influences subsequent next historical stages (Galtung and Inayatullah, 1997: 189).

The macrohistorical strength of *Civilization III* is that its isomorphic viewpoint accidentally embodied a basic understanding of macrohistory as sociography (Galtung and Inayatullah, 1997: 225). The game's macrohistorical simulation may stimulate game-players to critically reflect upon their individual microhistory and the emergent sociocultural mentalities of their historical era (Galtung and Inayatullah, 1997: 227). Johan Galtung and Sohail Inayatullah's in-depth summary of macrohistorians offers *Civilization*'s designers an innovative way to develop immersive game-play in future editions.

***Civilization III* and Digital Game-Based Learning**

While Peter Schwartz was creating a scenario about 21st century adolescents (Schwartz, 1991: 126), several trends were converging to create a market for digital game-based learning. Early epistemic roots included Seymour Papert's exploration of microworlds at MIT (Horton, 2000: 574-575), David Kolb's learning loop (van der Heijden, 1996: 37), and social psychology experiments (Prensky, 2000: 42). The late 1980s fascination with MTV editing (Prensky, 2000: 13) foreshadowed Generation X's hypertext minds (Prensky, 2000: 44). Changes in the early 1990s business ecosystem, notably the growth of corporate universities (Prensky, 2000: 333), design for doing (Prensky, 2000: 59; Schrage, 1999), knowledge management (Beer, 2000: 103), collaborative action learning (Beer, 2000: 42, 165; Prensky, 2000: 20), and communities of experts (Beer, 2000: 57; Prensky, 2000: 107) laid the groundwork for digital game-based learning models. Today such models are increasingly used as recruiting tools (Prensky, 2000: 337) and teaching strategic thinking (Prensky, 2000: 359). Digital game-based learning highlighted the truism that "new knowledge develops at the fringes" (Schwartz, 1991: 73).

Researchers found that simulations were intrinsic games that linked internal goals and gameplay (Prensky, 2000: 164). They replicated cognitive models of learning and organizational behaviour (Beer, 2000: 75). Simulations taught players to assume multiple roles by "breaking the rules and experiencing the consequences." (Horton, 2000: 572). They provided "natural case-based learning" opportunities that were not possible in centralized learning programs (Beer, 2000: 170).

Companies have applied off-the-shelf games like *Civilization III* to training problems. Shell developed a *Quake* mod for off-shore drilling orientation (Prensky, 2000: 321). The *Civilization* series has potential in conveying how complex social systems generate negative feedback loops (Prensky, 2000: 135). Its AI engine and adviser system enabled replay and critique (Prensky, 2000: 219). The initial release of *Civilization III* adhered to the asynchronous model of turn-based games (Prensky, 2000: 168). Its options for self-customizing had expanded, enriching the potential for custom-based training (Horton, 2000: 569). Future implementation of a multiplayer Web-based version would enable *Civilization III* players to tap group learning in order to solve "unstructured or undeveloped issues." (Beer, 2000: 73). This would involve a shift from an asynchronous to a synchronous/real-time model (Horton, 2000: 55; Prensky, 2000: 57). In the closing section I will examine four different cultural models that critique *Civilization III* and potentially extend its knowledge base.

M1: Cultural Diffusion (Jared Diamond)

Jared Diamond's book *Guns, Germs and Steel* (1997) presents a model of cultural diffusion that encompasses four key factors as to why some civilizations became more historically than others. He summarizes these four factors as geographic differences in wild plants and animal species; how axis orientation affected cultural diffusion and migration (favouring east-west Eurasia over north-south America); how differences between continents affected diffusion; and how geographic differences influenced a civilization's area and total population size (Diamond, 1997: 406-407).

For Diamond, food production was the core technology that made complex societies possible (Diamond, 1997: 286) and its systems evolved by foresight decisions and planning (Diamond, 1997: 107). Effective food production created time to develop societal innovations. "Axis orientations affected the rate of spread of crops and livestock, and possibly also of writing, wheels, and other inventions" (Diamond, 1997: 176), accelerating the growth of Eurasian civilizations over American and Oceanic ones. Intercontinental barriers were surpassed by "writing. . . weapons, microbes, and centralized political organizations." (Diamond, 1997: 215-216). Civilizations that spanned large areas and entire continents had more flexibility to adapt and adopt new technologies. They were "enabled to nourish themselves better and to outbreed, displace, conquer, or kill off societies resisting innovation." (Diamond, 1997: 154).

Civilization III models Diamond's insights through various methods. Your nomadic settlers begin by exploring their surrounding environment and founding early city-states. The number of cities and their food production capacity becomes crucial for geopolitical stability, negotiating diplomatic treaties and for keeping the populace happy. Diamond's kleptocratic solutions to revolutions and uprisings, which include disarming the populace, redistributing tributes, creating a monopoly of force, and constructing a self-justifying ideology (Diamond, 1997: 277, 278) are embedded in the AI responses. Lastly, the opening options for defining world size, land mass, water coverage, climate, and temperature yields many different initial scenarios. These have been extended by player maps and "mods".

Diamond's spectrum of "blueprint copying" (Russia's nuclear-bomb program) and "ideas diffusion" (Sumerian and Mexicans both invented writing) can be found in expanded diplomatic, espionage and trade options (Diamond, 1997: 224-225). He notes the Middle Ages technology flow was Islam to Europe and China's inventiveness (Diamond, 1997: 253). Applying Diamond's observations on the myth of the heroic mode of history (Diamond, 1997: 245) and why technologies are accepted or rejected (Diamond, 1997: 247-249) would make the R&D "technology tree" far more realistic. Diamond's insights could flesh out the contagion effect of plagues, the dangers of food shortages and espionage options for gaining other civilization's technologies. Perhaps computer simulations may also be an invaluable tool for developing predictive capabilities in historical sciences, which "is most feasible on large spatial scales and over long times, when the unique features of millions of small-scale brief events become averaged out." (Diamond, 1997: 424).

M2: The “Dominator/Partnership” Paradigm (Riane Eisler)

Riane Eisler’s book *The Chalice & The Blade: Our History, Our Future* (1987) was a watershed in feminist scholarship and cultural transformation theory. This approach “is nonlinear, focusing on both systems maintenance and transformative change . . . it includes the full span of human history . . .” (Galtung and Inayatullah, 141). Gender relations become the unit of study (Galtung and Inayatullah, 181, 216). Eisler distinguished between Partnership (gylanic) and Dominator (andocratic) paradigms (Abraham, 1994: 141), in which the former were “defined by affiliation rather than by violence-based rankings.” (Eisler, 1987: 151). Dominator societies included “the samurai of medieval Japan, Hitler’s Germany, the Masai of nineteenth-century East Africa, and Khomeini’s Iran . . .” (Galtung and Inayatullah, 142). Partnership societies are beginning to emerge in Scandinavian countries (Galtung and Inayatullah, 143). She sums up this difference in a powerful poetic image: “The power to dominate and destroy through the sharp blade gradually supplants the view of power as the capacity to support and nurture life.” (Eisler, 1987: 53).

Eisler’s perspective, elaborated in subsequent books, is beyond the scope of my analysis here, so I will limit my discussion to several key contributions. Eisler and her colleagues, notably Ralph Abraham, counterbalance the *global problematique* with a revitalizing *world mystique* (Abraham, 1994: 69) influenced by the Minoan Crete civilization. She deploys chaos dynamics (Abraham, 1994: 60-61) and cultural transformation theory (Eisler, 1987: 162) to study how abstract ideas are replicated throughout society and evolve into sociopolitical movements (Eisler, 1987: 170). Her ontological holism (Eisler, 1987: 136) reinterprets the period spanning the demise of classical Rome to the Renaissance (Eisler, 1987: 129, 131) that morphs the Hindu *yugas* into catastrophe theory (Galtung and Inayatullah, 1997: 184). Lastly, Eisler emphasizes the adaptability of human consciousness (Eisler, 1987: 173) and that our survival depends upon cultural evolution (Eisler, 1987: 196; Abraham, 1994: 68).

Each *Civilization* game begins in 4000 B.C., Ground Zero for the Dominator paradigm (Abraham, 1994: 141). While cultural, diplomacy and trade strategies have been strengthened in *Civilization III*, the AI engine usually prompts resource wars when city networks become a geographic meshwork, re-emphasizing the nation-state as a cultural unit (De Landa, 1997: 49-50, Eisler, 1987: 200). Moreover, by assimilating other cities by *kulturkampf* and warfare, players re-enact how early Partnership civilizations “that were not simply wiped out were now also radically changed.” (Eisler, 1987: 53). *Civilization III*’s focus is on the shift from agrarian societies (Galtung and Inayatullah, 145) to the industrial era (Wright, 2000: 190, Galtung and Inayatullah, 147) and eighteenth-century Enlightenment, in which “rational” man and “scientific” doctrines fused to create mass killing and environmental crises (Eisler, 1987: 157, Wright, 2000: 217).

Civilization III relies on the act of imagination to *enact* environments (Georgantzas and Acar, 1995: 58) through “metagaming” the AI engine’s rules and responses (Prensky, 2000: 120), and applying Giambattista Vico’s insight that “history was the manifestation of creative human activity.” (Galtung and Inayatullah, 1997: 35). Yet from Eisler’s perspective Meier’s game is a failure of imagination. Its scenarios narrow the range of historical probabilities into narrow outcomes (Ferguson, 1997: 85). Encroaching city-states often trigger new resource wars and thereby become

essential for controlling unpredictability in the game (Eisler, 1987: 47) by replacing Partnership possibilities such as France's troubadour period (Eisler, 1987: 139) with familiar Dominator models. The game re-idealizes aggression and conquest (Galtung and Inayatullah, 148). Its handling of modern killing technologies and cognitive maps of human actualization could be improved (Galtung and Inayatullah, 148). The leadership model could be too easily interpreted as promoting the totalitarian archetype of the 'strong leader' (Eisler, 1987: 187) and humans as dice (Ferguson, 1997: 86). Ashis Nandy reminded us that all utopias need exits to avoid becoming dystopias (Galtung and Inayatullah, 190). Jose Oretga Y Gasset's criticisms that macrohistorians evaluate periods and stages through ethnocentric prejudices is also relevant (Galtung and Inayatullah, 242). Eisler believes that our survival depends on "what *kinds* of symbols and myths are to fill and guide our minds: prohuman or antihuman, gylanic or andocratic." (Eisler, 1987: 184). Her suggestions would take *Civilization III* beyond its war-gaming past and create a scenario survival tool.

M3: The Group Selection Hypothesis (Howard Bloom)

Howard Bloom's book *Global Brain: The Evolution of Mass Mind from the Big Bang to the 21st Century* (2000) applies paleopsychological insights and the Group Selection hypothesis (Bloom, 2000: 4-6) to cultural evolution and civilizational development. Bloom draws on several epistemological models including social construction (Bloom, 2000: 66), complex adaptive systems, and the 'global brain' hypothesis examined by Peter Russell and Joel de Rosnay (Bloom, 2000: 3). This panoramic view parallels Pierre Teilhard de Chardin's *noogenesis* (Galtung and Inayatullah, 1997: 109) and James Lovelock's Gaia hypothesis (Galtung and Inayatullah, 1997: 152).

The core of this vast synthesis is a quintet of adaptive learning mechanisms (Bloom, 2000: 144) that shapes how groups and societies self-select. Conformity enforcers shape group identity and norms, 'level' individuals and coherence against external adversities (Bloom, 2000: 42). Diversity generators embody different cognitive approaches and values systems (Bloom, 2000: 43). Inner judges provide an emotional feedback loop to the environment (Bloom, 2000: 43). Resource shifters reconfigure flows in response to challenges and group needs (Bloom, 2000: 42-43). Intergroup tournaments, ranging from competitive gambits to international wars, accelerate social innovation and collective intelligence for survival (Bloom: 2000, 43).

Bloom offers many provocative examples in his synthesis of how collectives test ideas, create fundamentalisms and groupthink, and interface with natural ecosystems (Bloom, 2000: 220). The dynamic processes modelled by *Civilization III* have their roots in the evolving biological substrate. Cynobacterial colonies embodied the social power of the network effect (Bloom, 2000: 16). Plagues and wars tested Toynbee's creative minority (Galtung and Inayatullah, 1997: 120) and hastened urbanization (Bloom, 2000: 116). Cambrian life-forms discovered imitative learning (Bloom, 2000: 31). Primate research into the "Pumphouse Gang" found social conformity that also propagated information effectively (Bloom, 2000: 52; Wright, 2000: 289). Finally, Bloom warned of a looming battle between new viruses and human societies for survival in the global meshwork (Bloom, 2000: 215). By modelling these insights, *Civilization III's* programmers would create a richer gaming experience.

Since *Civilization III* begins with founding a city-state, Bloom's insights into cities-as-systems are relevant, echoing the distinction between cities as meshworks and networks (De Landa, 1997: 30-33). Biological time recapitulates as elite and generational shifts (Galtung and Inayatullah, 186). Transformations from nomadic bands to city-states was a resource shift from generalist to specialist, and in Catal Hayuk's example, increasing social stratification (Bloom, 2000: 107). Predatory nomads like the Mongols gave way to urban metropolises (Bloom, 2000: 117), foreshadowing Ibn Khaldun's primitive-civilization cycle (Galtung and Inayatullah, 1997: 27-28, 192). Increasing social complexity also generated more uncertainty. Creative bickering between city-states, a core aspect of Meier's game, was honed by natural selection to generate cultural diversity (Bloom, 2000: 94). City-states expanded the scope of reciprocal bonds to create cohesive regional alliances (Bloom, 2000: 110). Conquest and assimilation were not zero-sum: they were also an information swap that spliced cultures into mosaics (Bloom, 2000: 119). Bloom's study of Sparta ("a land-rooted military society . . . [that] faced resolutely inward") and Athens ("a seagoing trading empire. . . [that] faced without without") highlighted how different choices shaped collective futures (Bloom, 2000: 135). Sparta explored tribal cohesion and wealth by force (Bloom, 2000: 137) and social conformity. Athens embraced mentorship and complexity-generating subcultures (Bloom, 2000: 142). City-state culture imprinted strategies for dealing with uncertainty.

The game's isometric perspective, where "the player controls numerous units . . . within a vast playing area" (Poole, 2000: 135), shifted the player's focus to group dynamics. Here Bloom has many provocative insights. Dominant humans form leadership hierarchies based on controlling attention structures (Bloom, 2000: 168). Prestigious cultures and social mannerisms are copied by others (Bloom, 2000: 170), which *Civilization III* integrates by its system of cultural iconography and victory (Poole, 2000: 48). More problematic is the game's handling of group constriction and projection (Bloom, 2000: 194), resolving crises by finding external enemies and how inner judges create fear-driven fundamentalisms (Bloom, 2000: 197; Wright, 2000: 213). Meier's AI engine generates resource scarcities and revolutions (Poole, 2000: 119) but does not offer overtly authoritarian belief systems as options, except by controlling the geostrategic space and resource flows of others (Bloom, 2000: 204). While the game's ability to manipulate natural processes and time-space (Poole, 2000: 49) makes integrating Bloom's research worthwhile, the paleopsychologist would not overlook why such "videogames are already extremely good at providing an exhilarating blast of the animal emotions." (Poole, 2000: 235).

M4: Civilization-driven Game Theory (Robert Wright)

Robert Wright's book *NonZero: The Logic of Human Destiny* (2000) provides an intriguing starting point for *Civilization III* game-players: they became tribal leaders due to their social status (Wright, 2000: 26) in a "Big Man" society (Wright, 2000: 79). For "usually leaders are an expression of the forces at work in their own societies" (Schwartz, 1991: 146). By casting the players this way, Meier echoed Toynbee's perspective on 'pioneer leaders' (Fernandez-Armesto, 2000: 11).

Wright views cultural evolution through the prism of game theory (Wright, 2000: 296, 338), social complexity theory (Wright, 2000: 344-346) and positive feedback loops (Wright, 2000: 313) in which cultural evolution is intensified by non-zero-sum

dynamics and information exchange. This may be the hidden link between macrohistorical patterns and risk management techniques (Wright, 2000: 31; Galtung and Inayatullah, 1997: 173). He discerned an historical trend, despite wars and revolutions, of evolving toward “higher and higher levels of political organization.” (Wright, 2000: 58) and evading the second law of thermodynamics (Wright, 2000: 244). Wright’s macrohistory found Spencerian analogies between societies and organisms (Wright, 2000: 102; Galtung and Inayatullah, 1997: 70-71) and memetic co-evolution as a self-feeding process (Wright, 2000: 283). He also acknowledged the influence of William McNeil’s narrative history (Wright, 2000: 118).

There were many reasons for this “persistent and universal evolutionary logic” apart from Jared Diamond’s model of cultural diffusion (Wright, 2000: 76, 145). The public works in *Civilization III* facilitated public interest by serving the public’s welfare (Wright, 2000: 85). City-state wars often led to political unification (Wright, 2000: 110) and commercial trade routes (Wright, 2000: 117). The non-zero-sum evolution of city-states exemplified how “people became embedded in larger and richer webs of interdependence.” (Wright, 2000: 6). This tension, exemplified by the Hanseatic League, was between “the urban, more liberal future and the rural, oppressive past.” (Wright, 2000: 151). The growth of commerce then fuelled the spread of governance and national political institutions (Wright, 2000: 179). Governance shifted from centralized bureaucracies to decentralized meshworks (Wright, 2000: 247). The structural underpinnings of the Hanseatic League foreshadowed international meshworks such as the European Union and the late 1990s Asian currency crisis (Wright, 2000: 211).

Civilization III has several telling flaws from Wright’s perspective. Biological and cultural evolution is too complex for “what-if” games (Wright, 2000: 293). Meier focused too much on classical civilizations like the Greeks and Romans (Wright, 2000: 131). Like several macrohistorians, Meier made the fatal mistake, in the eyes of cultural relativists, of ranking certain societies as higher than others (Wright, 2000: 14). The game randomly generated barbarians as non-player characters, however, Wright argues persuasively that they had indigenous cultures and technology transfers (Wright, 2000: 126). Although we evolved amidst social hierarchies we were also status-seeking (Wright, 2000: 83), and so not necessarily consensus-driven sheep. In a brilliant critique of totalitarian logic, Wright noted that “direction plus purpose doesn’t necessarily equal goodness.” (Wright, 2000: 318).

Yet Meier gets many processes right. While its technology tree remains deterministic, *Civilization III* does capture how new technologies changed the balance of power (Wright, 2000: 152-153) and information processing capabilities (Wright, 2000: 250). This becomes a battle between “laggard” and “leading” cultures (Wright, 2000: 172) for geostrategic supremacy. Macrohistorical processes are often indifferent to individual political leaders (Wright, 2000: 228). The new cultural and diplomatic modes of game-play in *Civilization III* enable players to experiment with “tit for tat” game theory strategies (Wright, 2000: 340-342) and develop an appreciation of “actor logic” (van der Heijden, 1996: 211). Perhaps the most fulfilling legacy of a multiplayer *Civilization* game is that its participants will have a greater understanding of the “logics” of a geopolitical system (Schwartz, 1991: 141). Player-built mods and promoting on-line communities, offer a potentially vast scope to use *Civilization III* to boot-strap the civilizational challenge for a mass audience (Slaughter, 2002).

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