

Videogames, War and Operational Aesthetics

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In a much more procedural way than other images and sounds that represent war in the public, non-military domain such as war films and television programmes, animations, photojournalism, recruitment ads, art, memorial sculpture and so on, the audiovisual portrayal of armed combat in videogames serves specific ends in delivering the experience to the player. While these other forms have various reflective, reporting, critical, memorial, marketing or propagandistic purposes at their heart—all of which can play a part in the design of the video game imaging of war—a video game is first and foremost a playable software programme where user input and programmed responses are mediated by a user interface with input/output devices including mouse, keyboard, joystick, controller, speakers, microphone and, of course, the video display. An “operational aesthetic” takes precedence in video game design of the interface between player and programmed wargame.

The fact that the gameplay screen part of the User Interface design team’s job is termed in common parlance the “HUD”—for “Head-up Display”—betrays the military technoscientific provenance of this operational aesthetic. The HUD, developed to boost pilot performance in tracking and targeting the enemy, is an

iconic instance of the dissemination of post-World War Two (hereinafter post-war) military technology into the commercial domestic sphere. Indeed, so widely adopted is HUD technology for various vehicles and virtual vehicle interfaces today that it is almost a “dead metaphor” in the game production context. Here it simply means that operational audiovisuality of a display interface that provides the appropriate view(s), sounds and all the relevant information the player needs to respond to the game challenges.

This essay will offer an overview of some of the key elements of this operational aesthetics of video game combat as elaborations and continuations of this post-war military technoscientific legacy. This is not to claim that video game aesthetics or video game audiovisual culture more generally can be reduced to an expression of a Cold War militaristic vision of the world. There are other game and play legacies and other critical and creative adoptions of the computer softwares, game engines and input/output devices that emerged from the military research and development of this era.¹ But, as I have argued elsewhere, it is naive not to pay close attention to the fact that video games are in a way the first native media entertainment form of the computers and communications devices first developed in military technoscientific projects of the 1950s-1980s.² If all mainstream media have undergone a structural transformation into digital media forms today, video games were from the outset designed as interactive experiences available on digital computational machines.

I will look briefly at three “dimensions” of the aesthetics mediating the player’s experience of and within the game, including the player’s encounters with other

players in the gameworld. My game examples will span the history of video games and sketch out some dominant lines of development of these aesthetics. The three dimensions in question are the spatial, the temporal and the “epistemological” mode of engagement. By this last dimension I mean the knowledge of the game’s fictional world provided through experiencing the game. The way a game reveals a world as playable conditions this knowledge and it can be characterised as locateable on a spectrum running between informational and “immersive” player engagement. In a similar manner I will describe a spatial spectrum—between first person perspective and third person “commander’s view”—and a temporal spectrum between turn-based and realtime involvement in gameplay. These three elements overlap and combine in different ways to produce characteristic forms of gameplay. I hope to show how they provide aesthetic answers to certain operational questions that link video games to the military technoscientific considerations prevailing at their inception and continuing to evolve today. Video games play no small part in that ongoing dynamic.

Spatial Forms: Command View – First Person

Spacewar! (1962) is often cited as the first video game. While there are always precedents to the putative “original” of anything — in this case chess playing programs devised by Artificial Intelligence researchers, a tennis game devised to test and showcase the potential of visual output devices for digital computers, and even a bouncing ball programme serving a screen diagnostic purpose — *Spacewar!* is certainly a significant project in heralding a new form of screen entertainment as well as a new kind and even culture of computer creative production. It was

developed by a group of friends working at MIT including Steve Russell, Martin Graetz, Wayne Wiitanen and others with access to some of the latest hi tech military-industrial computer hardware and time on their hands to experiment with its potentials for other uses.³

The game was made in part to explore the capabilities of the new PDP-1 computer which possessed an advanced digital display (see figure 1). The circular screen recalls the analogue radar and sonar monitors developed during the war. The game idea that emerged out of this post-war hitech context of arms and space races and the overlapping of science fiction and fact was a battle between two spaceships. The challenge of manoeuvring one's spaceship under the influence of the gravity well of a star positioned in the centre of the screen added a complicating factor to gameplay. The interface offered a third-person view of the two-player contest allowing each player to see the results of both their own command inputs and that of their opponent.

This monitoring perspective—screen as monitor that shows the location of the enemy—shows the conflict in an overview and positions the player as commander who issues movement and firing commands to his or her spaceship avatar. The commander or control room interface is a major mode of spatialisation of combat-based gameplay that *Spacewar!* inaugurates. The screen functions partly as infographic diagram showing key metrics, coordinates and so on, and partly as map—that archetypal technique of military overview. Distance from the action,

enabled technologically, affords the commander the information and the picture she needs to decide where to go and when to fire.

I will explore more instances of this control room view in its deployment in combination with temporal and epistemological modes below. The other pole of the spectrum of ludic spatial aesthetics was also in development in the 1960s in projects to digitize flight simulator training for Air Force pilots in the U.S. So-called “father of Virtual Reality”, Ivan Sutherland’s US Navy’s “VCASS” (Visually Coupled Airborne Systems Simulator) project is a key moment in this history. To provide the visual display inside the VCASS or “Super cockpit” helmet prototype, Sutherland developed the basic architecture of the realtime generation of a moving first person view from a database of representational elements.⁴ While the VCASS’ helmeted virtual view of the operational environment was more successful as a forerunner of VR technology, the project’s flight simulator engine was a crucial plank in the development of digital simulator training systems which have become pervasive in military and commercial aviation and vehicle “piloting” more generally.

The breakthrough video game to deploy this first person perspective was Atari’s *Battlezone* (Atari, 1980). Made initially as an arcade machine, the procedurally generated vector graphics—which use mathematical expressions of basic geometrical elements like lines, curves and regular polygons—portrayed combat between the player and enemy tanks in a sparse wireframe world with minimal but effective visual cues to orient the player in the game world (see figure 2). If by this time the most advanced military and commercial vehicle simulators displayed far

richer, more illusionistically satisfying landscapes, *Battlezone* nonetheless delivered to the game-playing masses an equally realtime simulation of piloting a vehicle in combat. The “irreal” green world evoked the hi-tech abstractions of targeting reticules, radar monitors and computerized warfare in this immensely successful game.

Something central to the “first person” view is readily apparent in *Battlezone*: the player’s positioning does not correspond neatly to that of the reader of the first person novel or the viewer of a point of view shot in film or television. *Battlezone’s* player is best understood as playing at being the tank operator, or even as the tank inasmuch as competence in operating a vehicle requires a kind of “cybernetic” unification of driver and vehicle. Developing the habits of this synergy in a comparatively cost effective manner is a major goal of flight and vehicle simulation. Combat simulator training assumes this synergy and develops the habits of effective tactical response to the enemy of the pilot/vehicle unit. In *Battlezone*, the player is inserted into this tactical trainer position by the interface which provides for her a targeting sight, a diagram indicating both her direction of travel in space and her field of vision (top of screen), and the controls to move and fire. Even when *Wolfenstein 3D* (id Software, 1992) and *Doom* (id Software 1993) made the first-person shooter the most recognisable employment of first-person view, the player avatar—ostensibly a single individual—remained a virtual vehicle the player operates within a threat environment.

This is confirmed by the licensing of *Doom* by the U.S Marine Corp to make a modified training game, *Marine Doom*.⁵ This use of “COTS” games—Commercial Off-the-Shelf Games—for military purposes in the 1990s became a significant relay in the burgeoning military-entertainment complex. The licensing of the Gulf War-inspired combat flight simulation game *Falcon 3.0* (Spectrum Holobyte, 1991) by the USAF brought the first-person mode “back home”.⁶ Designed with consultative input by military aviators, this F-16 fighter simulator included a campaign involving missions in a hypothetical Middle East conflict requiring US military intervention. The player occupies the role of pilot operating a sophisticated vehicle with flight, navigation, communications, radar and weapons controls (see figure 3). The gameworld is around the player avatar, not at a (virtual) distance—she (or most often he in the demographic of flight sim players) pilots the world from the perspective of her vehicular interface.

Temporal Forms: Turn-based – Realtime

The contrast between turn-based and realtime gameplay relates video games to longer cultural traditions of practice with, for example, board games and card games on the one hand and football and tennis on the other. The military investments in the simulation of war across this spectrum of temporalisation between a back and forth mode and a simultaneity of player actions is most apparent in developments of video game versions of war board gaming. A World War Two battle simulation game from the successful *Panzer General* series, *Panzer General 3D Assault* (Strategic Simulations, 1999) illustrates some classic elements in the computerization of tabletop war board game traditions which go back to the Prussian Kriegspiel

innovations of the early 1800s.⁷ The “command view” over the *Panzer General 3D Assault* battle arena shows the terrain divided up into hexagons allowing for encounters of multiple units in one engagement to be “mapped” (see figure 4). The player can move her units according to a calculus of different capabilities that balance the displacement, firepower and defensive qualities of different elements. Once the player has completed her moves and commanded the resupply or commitment of reserves into the battle, the computer AI (or an opponent in player-versus-player mode) takes their turn in response. Any “attacks” made by the player are decided by the software algorithm—which incorporates a dice-like element of probability weighted according to the various strength values for the units in conflict.

Like the command view that inevitably accompanies this temporalisation of conflict, the phasing of battle simulates a technologically enabled distancing from the immediacy of encountering the enemy that opens a temporal “window of opportunity” for the macro-management of unit manoeuvre and resupply. All the technologies of command and control, renamed “C3I” in the post-Vietnam period—Command, Control, Communications and Intelligence—are dedicated to maximising the temporal “march” on the enemy to make the opening of this window as long as possible. The future in and as the unpredictable, lurking on the other side of your “turn” to act, is the danger here in the form both of the enemy as counter move and chance as arbiter of the outcome.

This turn-based timing is the basis of *Civilization*, one of the most successful video game series of all time. The most recent iteration, *Sid Meier's Civilization: Beyond Earth* (2K Games, 2014, see figure 5) extends the technological, economic and military contestation between competing civilizations into a future of off-world colonisation and hypothetical technoscientific invention. As the progenitor of the “4X” subgenre of strategy simulation game—Explore, Expand, Exploit and Exterminate—*Civilization* plays out a game of epochal historical development whose key mechanics are neatly summed up in these four functions.

Realtime has imposed itself with increasing urgency, however, on the evolution of conflict simulation and this can be understood as an emergence co-determined by coinciding (and indeed connected) advances in the speed and processing power of computers and in the speed of combat in the era of what Paul Virilio called the “arms of communication”—radar and electronic surveillance, smart weapons, satellite communications enabling realtime global command and dominance of the enemy’s use of the electro-magnetic spectrum, and so on.⁸ In the popular *Total War* series players play in both turn-based strategic mode similar to *Civilization* gameplay (see figure 6) but also in realtime tactical battles where they must manoeuvre and engage the enemy on the fly (see figure 7). Realtime Strategy games have gained more widespread popularity over the last decade. In games like *Starcraft II: Legacy of the Void* (Blizzard Entertainment, 2015) the player makes decisions about the kinds of units to “build” and how to deploy them under the pressure of the clock and the imminent arrival of the enemy player (or game AI) who brings their own means and method of attack to the encounter (see figure 8).

These games play at the moment-to-moment control of that dangerous contingency comprised of the enemy and the unpredictable future with precisely the digital technologies at the very heart of both the accelerated exacerbation of the danger and the ever-expanding effort to anticipate and avoid it. This is gametime as the “fun” register of the ambivalent—Bernard Stiegler would say “pharmacological”—realtime transformation of temporal experience of conflict in the digital age.⁹

Epistemological Engagement: Immersive – Informational

This screenshot of *League of Legends* (Riot Games, 2009) gameplay illustrates a powerful trend toward a predominantly informational and systemic engagement in the gameworld that is increasingly evident in recent video games (figure 9). The screen provides a multifaceted and constantly updated status report on all of the elements in play in the game software’s provision of simulated combat. Starting at the lower right, there is a minimap situating the current action in the main command view within the wider game map along with player and fellow team member avatar icons and stats. On the upper right are score and various team progress stats along with elapsed gametime and screen frame-rate. The game’s text chat is shown on the lower left and in the bottom centre is the main control panel for engaging in battle. Over each player’s avatar in the main game map individual scores and health and player resource graphics are displayed.

A prominent example of a genre that evolved as a variant of realtime strategy—the Multiplayer Online Battle Arena (MOBA) or Action RTS—*League of Legends* involves

realtime multiplayer strategy contests typically in teams of 5 players (5v5). Each player on a team brings to the fight the capacities (and comparative weaknesses) of one of dozens of avatars (“Champions” in *League of Legends*) who they can progress through various sequences of enhancements and upgrades by gaining “experience points”, trading items or purchasing them with in-game currency or even real money. As Joshua Jarrett has shown the overall gameplay conditions are in a more or less continuous state of evolution as players develop new strategies and tactics and the game developers introduce new avatars and respond to keep the gameplay “balanced”.¹⁰ Currently the most popular game genre in the world, with major e-sport competitions watched live and online and boasting audiences rivalling (and often exceeding) major mainstream sports broadcasting, MOBAs extend realtime gameplay into an ongoing dynamic of player-developer co-evolution of the genre.

The gameplay interface positions the player in command view while the temporal engagement is realtime. Like but unlike its contemporary, the first-person shooter *Battlefield 4* (Electronic Arts, 2013) from the enduringly popular franchise, the player is engaged in the temporal midst of combat but retains the “strategic” overview. *Battlefield* continues the first-person spatial immersion of play as the avatar-vehicle. In figure 10, this view recalls *Battlezone* as the player operates an M-1 Abrams tank but the ability to switch effortlessly between various kinds of soldier, tank, plane or boat is a signature characteristic of the franchise.

In both, however, the screens offer a mix of immersion within a fictional space of simulated war and a multitasking environment familiar to people engaging in more

prosaic digital functions involving databases, spreadsheets and so forth. Playing becomes less a temporary dip into an imaginary world than a cybernetic, informational engagement in the game where it is experienced as a software system. Playing is learning to “think like a computer” as Ted Friedman observed about playing *Civilization* and other simulation games.¹¹ And as Lev Manovich neatly put it, winning means figuring out what the algorithms are that mobilise the game’s database and “executing” them.¹² This is the required mode of epistemological engagement with the gameworld for competitive professional and “hardcore” players of shooters, realtime strategy, MOBAs and even massively multiplayer role play games like *World of Warcraft* (Blizzard, 2004). Such players will often employ “theorycrafting” analysis to “reverse engineer” the game’s programmed treatment of all the various possible inputs players and player teams can decide to make during a battle.¹³ The game reveals the world as complex and dynamic system graspable in the many statistical tables, flow charts and updated metrics generated in the course of gameplay and rendered usable through the operational aesthetics of its interface.

In a manner that parallels developments in the evolving post-9/11 conduct of military and security operations by the U.S and the “advanced” Western powers, video games such as MOBAs following this developmental trajectory exhibit and exploit the performative power of the digital modelling of phenomena and events to condition the very course of their appearance and unfolding. In MOBAs the transformational potential of the modelling and simulational treatment of combat through a digital interface is evolving in a direction that has less to do with the pursuit of an analogical relation to modern war (as it once was and perhaps still

appears to be in mainstream media coverage) and is better understood as an emergent game of iterative software development. The controversial redefinitions of the use of military force, the parameters and duration of battlespace, of combatant and non-combatant, of counter-insurgency and anti-terror strategy and so on in “real life” find aesthetic counterparts in the shifting epistemological engagements in the nature and stakes of video game fictional war. The ongoing overlapping of military and entertainment spheres testifies to these parallel and sometimes convergent developments. In areas such as the use of games for military recruitment, the algorithmic translation of observed behaviour captured by drone cameras (and stored in ever-growing video databases) into prompts requiring user responses to video analysis software, and the licensing and adaptation of game controllers for the remote piloting of unmanned drones overflying the “battlespaces” of the global south, war is subject to systemic, iterative technoscientific modification. But that is the subject for another essay.

Figure Captions

Figure 1. *Spacewar!* running on the PDP-1

Figure 2. Atari's *Battlezone* tank battle arcade game

Figure 3. Default player view from a virtual F-16 cockpit in *Falcon 3.0*

Figure 4. *Panzer General 3D*'s hexagonally gridded terrain map interface

Figure 5. Future clashes of civilizations in *Sid Meier's Civilization: Beyond Earth*

Figure 6. *Total War: Rome II* (Creative Assembly, 2013): Turn-based strategy gameplay

Figure 7. *Total War: Rome II* tactical realtime battle view

Figure 8. Realtime strategy play in *Starcraft 2: Wings of Liberty*

Figure 9. *League of Legends* Mobile Online Battle Arena gameplay screen.

Figure 10. *Battlefield 4*: reprising *Battlezone*

References

Allen, Thomas B., *War Games: Inside the Secret World of the Men Who Play at World War III*. (London, 1987).

Bogost, Ian, *How To Do Things With Video Games* (Minneapolis, 2010).

Patrick Crogan, 'Logistical Space: Flight Simulation and Virtual Reality,' in *The Illusion of Life 2: More Essays on Animation*, ed. A. Cholodenko (Sydney, 2007), pp. 368-401

Croghan, Patrick, *Gameplay Mode: War, Simulation and Technoculture* (Minneapolis, 2011).

Patrick Croghan, 'Play (for) Time,' in *Playful Identities: The Ludification of Digital Media Cultures*, ed. V. Frissen, S. Lammes, M. de Lange, J. de Mul and J. Raessens (Amsterdam, 2015), pp. 225-244.

Friedman, Ted, *Electric Dreams: Computers and American Culture* (New York, 2005).

Hilgers, Philipp von, *War Games: A History of War on Paper*, trans. Ross Benjamin (Cambridge MA, 2012).

Jarrett, Joshua 'Fountain Hooks, Emergent Exploits and MOBA Games,' <https://www.academia.edu>, 10 July 2014.

Timothy Lenoir and Henry Lowood, 'Theaters of War: The Military-Entertainment Complex,' in *Collection - Laboratory - Theater: Scenes of Knowledge in the 17th Century*, ed. J. Lazardzig, L. Schwarte and H. Schramm (New York, 2005), pp. 427-456.

Manovich, Lev, *The Language of New Media* (Boston, 2001).

Christopher A. Paul, 'Optimizing Play: How Theorycraft Changes Gameplay and Design,' *Game Studies* XI/2 (2011), <http://gamestudies.org>.

Stiegler, Bernard, *What Makes Life Worth Living: On Pharmacology*, trans. Daniel Ross (London, 2013).

Virilio, Paul, *Desert Screen: War at the Speed of Light*, trans. Michael Degener (London, 2002).

¹ Ian Bogost, *How To Do Things With Video Games* (Minneapolis, 2010), p. 8, Patrick Crogan, 'Play (for) Time,' in *Playful Identities: The Ludification of Digital Media Cultures*, ed. V. Frissen, S. Lammes, M. de Lange, J. de Mul and J. Raessens (Amsterdam, 2015), p. 235.

² Patrick Crogan, *Gameplay Mode: War, Simulation and Technoculture* (Minneapolis, 2011), p. xiii-xv.

³ Ted Friedman, *Electric Dreams: Computers and American Culture* (New York, 2005), p. 127.

⁴ Patrick Crogan, 'Logistical Space: Flight Simulation and Virtual Reality,' in *The Illusion of Life 2: More Essays on Animation*, ed. A. Cholodenko (Sydney, 2007), pp. 384-386.

⁵ Timothy Lenoir and Henry Lowood, 'Theaters of War: The Military-Entertainment Complex,' in *Collection - Laboratory - Theater: Scenes of Knowledge in the 17th Century*, ed. J. Lazardzig, L. Schwarte and H. Schramm (New York, 2005), p. 440.

⁶ Ibid., p. 442.

⁷ Philipp von Hilgers, *War Games: A History of War on Paper*, trans. Ross Benjamin (Cambridge MA, 2012), pp. 45-62.

⁸ Paul Virilio, *Desert Screen: War at the Speed of Light*, trans. Michael Degener (London, 2002), pp. 48-49.

⁹ Bernard Stiegler, *What Makes Life Worth Living: On Pharmacology*, trans. Daniel Ross (London, 2013), p. 2.

¹⁰ Joshua Jarrett, 'Fountain Hooks, Emergent Exploits and MOBA Games,' <https://www.academia.edu>, 10 July 2014.

¹¹ Ted Friedman, *Electric Dreams: Computers and American Culture*, p. 136.

¹² Lev Manovich, *The Language of New Media* (Boston, 2001), p222.

¹³ Christopher A. Paul, 'Optimizing Play: How Theorcraft Changes Gameplay and Design,' *Game Studies* XI/2 (2011), <http://gamestudies.org>.