9 CONTROL

Peter Krapp

Who or what, in the setting we describe as gaming, controls whom or what? When game studies seek to describe how technical and other protocols structure gaming actions, a focus on "control" needs to look beyond the input device as such—beyond the history and the affordances of controllers. To control means to surveil something or someone, suggesting a means of domination or power, but it also means to exercise restraint, to regulate, to curb the spread of something. As the etymology of the word *control* suggests, it is also a managerial activity—you control, check, manage, test, and verify processes. All three registers—a hands-on manipulation, a selective process, and managerial oversight—are pivotal in gaming, and this chapter seeks to unfold them successively. To the extent that games are an adaptive response to the omnipresence of computing (teaching us how to interface with our gadgets), it could be shown that the affordances and strictures of our devices control what we see as possible with them. Put another way, a closer look at gaming controls needs to go beyond the twitchy feedback of input devices and include a sense of the historical and technical conditions of possibility of the gaming setup that we are familiar with today.

That is not to say the actual control input devices are not an important aspect of debugging the history of gaming. Whether one sees the graphic user interface (GUI) as a Taylorist discipline teaching ergonomic interaction or as a yielding to reductions of interaction to resemble what users had already learned, the GUI is pivotal for our culture. And the discursive formation of computer games runs parallel to that of the GUI—interaction revolves around perception, hand–eye coordination, and discerning errors. Input devices and operating routines must be tightly controlled, or they appear faulty. If my clicking or pecking can yield unpredictable results or create the (correct or erroneous) impression of a variable and perhaps even uncontrollable situation, then a fundamental principle of interaction is at stake: a peculiar blasphemy against widely held beliefs about designing human–computer interaction. Observers of computing culture and human–computer interface (HCI) design have joked that if HCI

experts were to try their hand at game development, the result would be a big red button with the label "press here to win." Inversely, if my user interface were chaotic and irregular (regardless whether it is a browser window or a game, a buggy beta version or an intentionally artsy deconstruction of a browser or a game), then I would be highly unlikely to accord any value to accidental elements. Whereas a typical GUI—from the desktop metaphors of Vannevar Bush's Memex to the Xerox Star or Apple Lisa and beyond—aims for visibility and patient acceptance or even anticipation of user error, games probe the twitchy limits of reaction times and punish user error with loss of symbolic energy. Audiovisual cues pull users into feedback loops that a game might exhibit proudly, and other, perhaps less playful user interfaces will tend to hide them in redundant metaphor.

Few people can claim to remember playing with the original *Tennis for Two* (Higinbotham, 1958) button, the original *Spacewar!* (Russell/MIT, 1962) levers, the knobs of the Coleco Telstar or the Wonder Wizard. And not too many recall their use of the Odyssey Shooting Gallery rifle, the Nintendo Entertainment System (NES) Zapper pistol, the Sega LightPhaser, or the Atari XG-1 and Sega Saturn pistols, though the Namco GunCon3 and the more recent PlayStation Move Sharpshooter are perhaps more readily recognized. Controllers such as the NES PowerGlove and the Sony EyeToy have only recently been rehabilitated as progenitors of what the Xbox Kinect and the PlayStation Move now offer. Music and rhythm game controllers hark back to the plastic maracas for the Sega Dreamcast game *Samba de Amigo* (Sonic Team 1999), not to mention GameCube bongos or the *Guitar Hero* (RedOctane and Harmonix, 2005) and *RockBand* (Harmonix, 2008) instrument simulacra. So of course there are musical instruments, guns, racing wheels, and tracks balls, but for the most part control devices that offer alternatives to the generic keyboard have congealed around the joystick and button design. In general, consoles progress, if that is the right term, from a simple stick-and-button mode, as seen in the Tandy or Atari 2600 controllers, to the addition of a number pad in the ColecoVision and Atari 5200 controllers and to the introduction of options on the NES, Genesis, Super NES, Sega CD, Nintendo 64, and Dreamcast controllers, some of which also feature shoulder buttons. The RCA Studio II, which came out before the Atari VCS, used only a number pad; the Emerson Arcadia 2001 had a removable stick housed on its dial located below its membrane numeric pad. Starting with the Nintendo 64 controller, console remotes usually feature sticks, and ever since the NES controller most console input devices are organized around a directional pad—a flat and usually four-directional control with a button on each point, known as a "d-pad" and now found on most if not all console and other game controllers as well as on TV remote controls and mobile phones (which are of course increasingly game platforms). A precursor to the d-pad could be seen on the Intellivision by Mattel in 1980, but Nintendo introduced the now common cross design for the handheld *Donkey Kong* game in 1982. The PlayStation 2, GameCube, Xbox, and WiiMote controllers inherited this assortment of buttons, d-pad, sticks,

and shoulders. Many personal computer (PC) gamers continue to live with the strictures of the QWERTY keyboard and the venerable WIMP (windows, icons, menus, pointer) setup handed down from decades ago, while others now use console-style gamepads with their PCs.

But beyond the simple consolations of timelines and industry histories, debugging game history requires us to outline conceptual dimensions that underpin the interface culture of gaming today, so we move from controller to control more broadly. As Claus Pias (2002) documents, one may recognize three clusters of technology, rhetoric, and psychological register in what gaming weaves together into its setup, and, of course, different games foreground these clusters to varying degrees. There are differences between controlling a video game race car, controlling an avatar in role-play mode, and controlling the tax rate in a simulation game. Action games rely most obviously on speedy reactions at the GUI, thus providing immersive metaphors; on the psychological level, they tend to emphasize thrills and transgressions. Adventure and role-play games rely less on speed than on decisions and explorations, thus emphasizing not so much the graphics as the database and pivoting less on metaphor than on metonymy. Strategy games, in turn, foreground planning and constellations, emphasizing rules and consequences in a logic akin to allegory, and fostering not so much the rush of the id or the role-play of the ego but the rule-based play of the superego. Thus to abbreviate Pias (2002), control in games that emphasize graphics, immersion, and speed will hinge on the input device, but control in role play will center on interaction design and choice, while control in strategy or god games and simulations will lean more toward the overview and planning perspective. What all three registers share, however, are deep roots in traditions and technologies that go back before the history of computer games.

Modern information technologies took shape more than a century ago, as James Beniger (1996) details. What in the mechanical era was effected by a crank or a lever becomes effected by a mere trigger in the computer era: the desired effect is already stored in the apparatus, hidden in its complication so as to suggest effortless use (of the camera, the ATM, or the car, for example). If we trace the interface design of computer games back to the formation of the three associative clusters that Pias suggests, the GUI clearly owes a great deal to Frank Bunker Gilbreth and Lillian Moller's (1917) applied-motion studies, which sought to transform the conditions of labor into the foundations of scientific management with the aid of chronocyclography and film. The database, of course, has its roots in library and business card catalogs (Krajewski 2011). Strategy games have a much-documented history in military planning and policy consulting (von Hilgers 2012; Crogan 2011). The maps and calculation tables blackboxed into the complex scenarios of strategy games as well as the decision trees and associative links that go into databases of items, paths, and characters for role-play games are of course rarely encountered in isolation, yoked as they usually are to a GUI that tends to gloss over its roots in the radar screens of World War II (Pias 2011). If having simple controls at the tip of your

finger dissolves the close relation between cause and effect, it can also remove the finger from responsibility in direct correlation to the obscuring of the informational process. The more user interfaces trivialize information technology and relegate users to button pushers, the more digital culture threatens to resemble the seductive yet dysfunctional placebo of the close-the-door button in elevators, placed there just to give you the erroneous but flattering impression of contributing to the speed of your trip. Computers are complex enough that we have come to accept that their inner workings are hidden behind interfaces that make them "usable." In gaming, this technical provision sets the scene for the feedback loops of input devices, screen events, and the player's conditioning to repeat or progress. Media history can help us understand both the conditions of possibility and the consequences of the "user-interface" culture.

Following the iterative conditioning of the user by WIMP metaphors, we need to interrogate the surfaces and other control metaphors of the GUI in gaming. Doug Engelbart's groundbreaking demonstration at the Fall Joint Computer Conference in San Francisco on a Monday afternoon in December 1968 was followed by access to remote terminals to the SRI computers in Menlo Park (30 miles away) "in a special room set aside for that purpose." It became enshrined as "the mother of all demos" because it influentially showcased graphics in windows, navigation and voice input, video conferencing, the computer mouse, word processing, and online collaboration. Once it became evident that the WIMP model had taken over almost completely, some experts started deploring the lack of innovation in interfaces, calling for an HCI based on language, richer representation of objects, expert users, and shared control (Gentner and Nielsen 1996). Arguing that the WIMP interface was for naive users, the expert and "anti-Mac" user interface was supposed to supplant metaphors with reality, seeing and pointing with describing and commanding, WYSIWIG with representations of meaning; offer an overdue departure from the stale icons of file, desktop, trash can, and so on; and institute instead an interface for the "post-Nintendo generation" that might expect to play in a richer environment. Playful critiques of the control afforded by tired metaphors inherited from Vannevar Bush's Memex include Dennis Chao's (2001) modification of *DOOM* (id Software, 1993) for Unix process management, and Chris Pruett's (2000) Marathon Process Management using the game engine by Bungie (1994).

Furthermore, game designers and game critics alike have been calling for increased literacy about command-and-control structures that, like learning to swim or to read, enable us to move past fear and isolation into active engagement with the unknown and the incalculable. Key to what Alexander Galloway (2004) calls "countergaming" would be the quest to create alternative algorithms; as he diagnosed, many so-called serious games tend to be quite reactionary at the level of their controls, even if they cloak themselves in progressive political desires on the surface. Critical gaming would tend to move away from the infantilizing

attraction of play as obedience to rules and toward a "progressive algorithm"—if there can be such a thing. In a primary mode, it would teach its players the lessons of the game's controls; in a secondary mode, it would build on the discovery and exploration of the game's regularities and irregularities and invite creative play with the game. This difference between playing a game and playing *with* a game is crucial to gaming culture: whereas the former teaches one the game through navigating the game's commands and controls, the latter opens one up to critical and self-aware exploration. Like learning to swim, gaming means learning to learn and initiates us into training systems; yet like learning to read, it does not stop at a literal obedience to the letter. Computer games tend to obey a certain set of design rules, chief among them being efficiency, expediency, and mastery of interfaces and interactions—because we value in such games that they "work."

This technologic embedded in control devices can also be said to install their program in the user. This means that the more gaming withdraws access to the hardware and software behind ever more "superficial" yet "intuitive" interfaces, the less actual control the users have, despite and because of the illusion of being in control of their devices—the Wii that can never be fully turned off, the Xbox 360 that won't accept older Xbox games, the mobile phone that reports your location and consumption to the publishers and developers of the games loaded on your device. Thus, control also has a social dimension. Where Gilles Deleuze (1992), along with Michel Foucault (2009), points to a historical shift from sovereignty to discipline and then on to what he calls control, he sees power located in an increasingly decentralized way, no longer embodied or built into social structures but anonymously and autonomously regulating and manipulating the flow of all social exchanges. In the medieval order of sovereign power, rulers taxed and threatened rather than disciplined and organized production. In Foucault's conception of the disciplinary societies that arose later, individuals used to pass from the family to school and to training barracks and factories, from one institutionalized space of enclosure to another, including of course the hospital and the prison. After World War II, environments of enclosure and interiority entered into crisis mode, marked by endless waves of reform—school reform, military reform, prison reform, health-care reform, and so forth—while new free-floating forces of control emerged: pharmaceutical production, genetic manipulation, information processing and aggregation, as the corporation replaced the factory, continuous education replaced school, ankle bracelets replaced the prison, and perpetual control replaced the rites of passage that used to separate the various spaces of enclosure. As Deleuze comments, "Control is not discipline. In making freeways, for example, you don't enclose people but instead multiply the means of control" (1998, 18). Galloway and Eugene Thacker seek to translate this logic into the realm of technoculture, where protocol is "a totalizing control apparatus that guides both the technical and political formation of computer networks, biological systems, and other media" (2004, 8). Surely game culture today fully

participates in the same paradigm shift, including but not limited to the phenomenon known as gamification, whereby the masses are being enticed into quasi-playful digital labor that is often little more than a new kind of crowd control with an ever more invisible hand. Along the same lines, multiplayer games see a great deal of crowd control, channeling what is and is not possible in games by dint of constraints that are less technical than political and economical. "As governments increase their control, they replicate their vices on the Internet" (Goldsmith and Wu 2006, viii)—and surely much the same goes for the multinational providers of gaming software and hardware.

To conclude, a cursory account of control in gaming can profile three strands, each of which brings its own historical depth to bear. One is the heritage of ergonomics and usability testing since Gilbreth, where the image source is the reality of the workplace, the tasks are mechanical in a setup regulating energy, the motivation is physical production, and the peculiarity of the interface is that reality is treated as a surface. Control in this sense is reduction of complexity and of fatigue, harnessing repetition. Second, in the WIMP era, the image source is not reality but a flattened representation, the tasks are textual in a setup regulating information, the motivation is mental production, and the image is symbolic screen action. Control in this sense is choice, testing options. Finally, in the current gaming register, the image source is a stale metaphor (e.g., pretend this pixel is a monster; pretend this is a button; this tree means forest; this tank means army), the task is selection in a setup regulating errors, the motivation is consumption, and the image simulates a surface. Control in this sense is the regulation of scenarios, management. Under these progressively flattened conditions, access to and interaction with gaming interfaces makes human control only one facet of a tightly constrained and, indeed, controlled environment that sometimes threatens to reduce the human in the loop from a true controller to a mere "ebkac"—an error between keyboard and chair.

Works Cited

Beniger, James. 1996. *The Control Revolution: Technological and Economic Origins of the Information Society*. Cambridge, MA: Harvard University Press.

Chao, Dennis. 2001. "*Doom* as an Interface for Process Management." *SIGCHI* 3 (1): 152–157. http://cs.unm.edu/~dlchao/flake/doom/chi/chi.html.

Crogan, Patrick. 2011. *Gameplay Mode: War, Simulation, and Technoculture*. Minneapolis: University of Minnesota Press.

Deleuze, Gilles. 1992. "Postscript on Control Societies." *October* 59 (Winter): 3–7.

Deleuze, Gilles. 1998. "Having an Idea in Cinema." In *Deleuze and Guattari: New Mappings in Politics, Philosophy and Culture*, ed. Eleanor Kaufman and Kevin Jon Heller, 14–19. Minneapolis: University of Minnesota Press.

Foucault, Michel. 2009. "Alternatives to the Prison: Dissemination or Decline of Social Control?" *Theory, Culture, & Society* 26 (6): 12–24.

Galloway, Alexander. 2004. *Protocol: How Control Exists after Decentralization*. Cambridge, MA: MIT Press.

Galloway, Alexander, and Eugene Thacker. 2004. "Protocol, Control, and Networks." *Grey Room* 17 (Fall): 6–29.

Gentner, Don, and Jakob Nielsen. 1996. "The Anti-Mac Interface." *Communications of the ACM* 39 (8): 70–82.

Gilbreth, Frank Bunker, and Lillian Moller. 1917. *Applied Motion Study*. New York: Sturgis & Walton.

Goldsmith, Jack, and Tim Wu. 2006. *Who Controls the Internet? Illusions of a Borderless World*. Oxford: Oxford University Press.

Krajewski, Markus. 2011. *Paper Machines: About Cards and Catalogs 1548–1929*. Cambridge, MA: MIT Press.

Pias, Claus. 2011. "The Game Player's Duty. The User as the Gestalt of the Ports." In *Media Archaeology: Approaches, Applications, and Implications*, ed. Erkki Huhtamo and Jussi Parikka, 164–183. Berkeley: University of California Press.

Pias, Claus. 2002. *Computer Spiel Welten*. Berlin: Diaphanes. Translated as *Computer Game Worlds*. Amsterdam: Amsterdam University Press, 2015.

Pruett, Chris. 2000. Projects web page. http://www.dreamdawn.com/chris/projects.html.

Von Hilgers, Philip. 2012. *War Games: A History of War on Paper*. Cambridge, MA: MIT Press.