

JENNIFER JENSON AND SUZANNE DE CASTELL

# “GET UP AND PLAY!”

## FROM SIMULATION TO IMITATION IN DIGITAL GAMES



One of the central questions for education in the 21<sup>st</sup> century is how best to prepare young people to inhabit a complex world constantly remediated by and remediating new and emerging technologies: how best to act within a *network* populated not only by other human actors, but in increasingly significant ways, by non-humans, including technologies (artifacts) and environments which are themselves also agents, both acting and acted upon. Working in the field of science and technology studies in the 1980s, Michel Callon and Bruno Latour developed actor-network theory (ANT) – a theory that reconceives human agency in terms of distributed capabilities mobilized when humans and nonhumans co-operate, both materially and semiotically. ANT attempts to explain the relationship between actors and things, illuminating their inter-dependencies, their interactions, and the encompassing “support networks” too long overlooked in androcentric theories of human action.<sup>1</sup> Given that technologies have taken on a greater and more inter-dependent role in the lives of young children as well as adults, ANT offers a productive and illuminating way of untangling and understanding both their threats to and their promises for teaching and learning by focusing on their networked relations rather than on technologies per se.

As professors working in faculties of education for the past ten years researching digital gameplay and the design and development of games for education, we have often been asked, “Are digital games good or bad for children?” As with questions like “What is literacy?” or “How is reading best taught?” or “What makes a good teacher?”, the answer is a resounding “it depends”. More productive questions might be: “What is so compelling about this medium that even young children are willing to devote hours and hours to complex, demanding and challenging forms of computer-supported play?” and, “While playing – and in order to play – what might players be learning and how are they learning it?”

The discourse of good/bad is always a slippery one and we do not want to argue that eight-year-olds should be playing games that are targeted and rated for adults or that any games are intrinsically “good” or “bad”. What we do argue, instead, is that digital games, like television, film and books in the past, not only merit ongoing study, but also rightly deserve much of the attention recently devoted to them.

In this article, we briefly outline some of the early research in the field of digital games and education that attempted to answer the question of what and how people learn from playing games. We then turn to the recent revolution in gameplay controllers to illustrate how gameplay has undergone a significant epistemological shift – one that no longer sees it as the simulation of actions on a screen, but instead uses imitation as its central element, perhaps for the first time effectively giving players access to a form of play-based learning previously relegated to the very young.

#### **MORE THAN ENTERTAINMENT**

What and how players learn from playing commercial entertainment-oriented digital games has been at the forefront of research on education and gameplay in the last several years. Long viewed as artifacts of an “unpopular

#### **EN BREF** Les jeux informatisés sont-ils bons ou mauvais pour les enfants?

**Réponse :** tout dépend. Il serait plus productif de demander : « En quoi consiste l'attrait de ces jeux et qu'est-ce qui fait que les enfants soient disposés à consacrer des heures à des formes complexes, exigeantes et difficiles de jeu informatisé? » et « En jouant – et pour jouer – que peuvent apprendre les joueurs, et comment? ». On convient maintenant que de nombreux jeux vidéos constituent des environnements d'apprentissage efficaces où l'action du joueur (en tant qu'apprenant) et l'acquisition de connaissances sont primordiales. En outre, de nouvelles manettes (comme celle du Wii) ont amené un important changement épistémologique de la simulation à l'imitation comme élément central des jeux, permettant aux joueurs, peut-être pour la première fois, d'accéder à une forme d'apprentissage par le jeu antérieurement reléguée aux très jeunes enfants.

culture,” particularly by educators and educational theorists, commercial videogames are now recognized as highly effective learning environments where player (as learner) agency is paramount, and where the acquisition of knowledge and competency is infused in engaging and pleasurable play, rather than in a prescribed task.<sup>2</sup>

#### **VIDEOGAMES EXCEL AT OFFERING A RANGE OF CIRCUMSTANCES**

#### **THAT CALL FOR THE CONTINUAL UPDATING OF PREVIOUSLY LEARNED**

#### **STRATEGIES IN ORDER TO MOVE ON IN THE GAME.**

In his early work on videogames, James Paul Gee went so far as to specify a series of “learning principles” that commercial videogames enact. He claimed, for example, that learning in videogames is not accomplished through the delivery of content, understood as abstracted “facts”, but that meaning and significance arise through the player’s activation and negotiation of images, objects, and events in specific game activities. He challenges classrooms to imagine similar kinds of “teaching”. Alongside their ability to contextualize and embody meaning through player agency and exploration, Gee notes that videogames also provide good models for understanding the educational problem of “transfer,” where solutions to an earlier problem require modification in the face of a new challenge. Transfer, Gee explains, requires that learners identify the similarities and differences between two sets of circumstances. While schools often deliberately structure such situations, he notes that direct transfer rarely happens in real life. Videogames, however, excel at offering a range of circumstances that call for the continual updating of previously learned strategies (either from the same game or, as importantly, from other games) in order to move on in the game. That these challenges are often framed as urgent “life-or-death” situations, and that the consequences of a poorly modified strategy are often immediate, means that players must reflect on and innovate previous solutions “on the spot”.<sup>3</sup>

More recent work has focused on what players are learning by playing Massively Multiplayer Online Games (MMO’s), outlining the “traditional” literate demands of playing (reading, writing, posting comments), and some of the “higher order” reasoning skills that are publicly displayed by extremely experienced players.<sup>4</sup> Gee, argues that “good” commercial games are so compelling because they can indoctrinate players into specialized, higher order discourses, something that continues to be the most difficult



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AND ACT TOGETHER.**

challenge of traditional literate schooling. For example, I might never actually skateboard, but if I play a skating game like "Tony Hawk" long enough and gain enough skill in it, I will become familiar with all the specialized moves and all the specialized language of skateboarding 'literati'. In other words, I will have moved, through simulation of a skilled practice, from tacitly knowing that skateboarding involves a skater and a board, to mastery of a "semiotic domain" in which I am able to discuss, think and learn about, and generally share a culture of skateboarding, even with those who are professionally trained. Considerable amounts of money, both public and private, have been invested in the argument that physical skills can be acquired through simulated play in a range of videogame-based sports environments. A similar, controversial argument has been made that first person shooter games both can and do support the development of highly accurate weapons skills.<sup>5</sup>

What is significant here, from an educational standpoint, is that digital games are more than just entertainment: they are artificially intelligent spaces where people collaborate, problem solve, read, strategize, communicate, participate, and act together both inside and outside a game and its rule structures, and they are doing so in increasing numbers. This has challenged many of us in education to see if we can build compelling digital games that might move someone from novice to expert status, not in the worlds of skateboarding or warfare, but in history, mathematics or science.

**FROM SIMULATION TO IMITATION**

Traditionally, digital games have been played one of two ways: a player either sitting at a desk in front of a computer screen using the keyboard/mouse/"joystick" as input devices, or sitting around a screen (usually a television) using a gamepad/controller to interact with the game. In both cases, the player presses keys, a mouse and/or buttons, and that action is "translated" into an on-screen simulation of action by the player's character/avatar. For example, in order to make Mario jump over the cartoon-like mushrooms in the game *Super Mario Bros.*, a player clicks the correct button (either on a keyboard or on a controller) and Mario's simultaneous corresponding action is to jump. In this way, the action of jump (or walk or run or shoot) is a simulated act that is synchronized with the correct input cues from the player.

In the past few years, input devices have radically changed, resulting in a very different form of gameplay, one that may greatly alter how we understand and use digital games for education.

New controllers are most easily divided into three categories: the "Wii wand", music related devices (dancepads, microphones, plastic guitars and drums), and the Nintendo DS (touch screen, voice recognition). The "Wii wand", which



is shaped like a remote control, is wireless and uses infrared technology to detect player movement that is synchronized with an avatar displayed (usually) on a TV screen. What is so very different about the wand is that it encourages embodied, active play that corresponds to, indeed imitates (instead of simulates) on-screen action. For example, a game entitled

"Wii Sports" came free with purchase of the new Nintendo Wii system. In that game, players can construct an avatar, a "Mii" and are then offered an array of sports games to play through that avatar – tennis, golf, boxing, bowling and baseball (and other mini-games). In order to play, the player must imitate a golf swing, a tennis swing, a baseball swing, or rolling a bowling ball, using the wand. In effect, the player imitates "real world" action that is correlated with action within the game. While it is possible to cheat the action – and not fully swing a golf club, for instance – for the most part, the action of the player does imitate, say, throwing a punch in boxing. Indeed, the Wii marketing campaign has been "Get up and play" – to counter the ethos that playing games is a sedentary activity.

Dance pads, which have also dragged people out of their chairs and off their couches to play games, are just one of many music related controllers that are also reshaping digital gameplay. *Guitar Hero I, II and III* is a series of games using a plastic guitar as a controller. The player imitates playing a guitar by pressing colored keys in time to a music track. Difficulty increases with the number of notes required to be played, the speed of play, and the number of notes played together (to create a chord). Very literally, then, the player's imitative action corresponds, mimetically and physically, to playing notes displayed on the screen.<sup>6</sup> Similarly, in *Rock Band* (one of the hottest selling games of December 2007), players imitate musical "play" through singing, playing guitar and by using traditional wooden drumsticks on a set of plastic drum pads that work very similarly to the guitar, in that a player hits the correct colored drum as directed by the music. *Rock Band* is meant to be played collaboratively, and up to four band members can play simultaneously (vocal, drums, guitar and bass).

Playing games is not a "solo" act: players are both acting and acted upon by the technology, and their play is very much situated within a broader network of actions, actors and activities which are community-based and supported. This radical modification of the way games are played, from simulation to imitation, has already attracted new audiences: in Japan, female players exceed male players on the handheld Nintendo DS; in the U.S., in Canada, and elsewhere seniors' homes are purchasing the Nintendo Wii (with its suite of sports games) to encourage residents to exercise.

We do not yet know whether and how skills acquired in playing these imitative practice games can be transferred to "real world" activities, and vice versa (a classic problem for any educational program). To look more closely at transference in relation to these imitative gameplaying practices, we initiated a pilot study, which we conducted in the summer of 2007, with four young adults (17-20), two with prior musical training, and two without. Our primary question was: might there be a connection between prior music



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skills and first time play skills when playing *Guitar Hero II* or *American Idol* (a game where a player sings into a microphone, and the game judges relative pitch, length held of note, and timing). Briefly, we found that, at least for first-time players, the ability of those with some musical training to pick up and play the game far exceeded the ability of those without. While a pilot study sample of four people doesn't permit generalization, it does suggest some interesting transference questions: could it be the case, inversely, that players highly skilled at a game like *Guitar Hero* or *Rock Band* could actually improve their music skills in the real world (especially those related to rhythm and timing)? Is it possible to use games like *SingStar* or *American Idol* as a means of training one's voice? Could playing Wii tennis improve someone's tennis game?

As we further develop and pursue this ANT-inspired study of the impacts of controller changes on who plays, how, and to what effect, we will ask whether “transfer” works very differently in simulation than in imitation. This may be a simple question of proximity – of “where the action is”, so to speak. The re-embodiment of play in imitation-driven digital games means, we suspect, that both the work and the learning involved in play affords real transfer to the knowledges and skills thereby imitated. Researching players using the new controllers allows us to take into consideration that, while the button mashing of simulations may have impacted players thumb and finger muscles, Wii players imitating boxers really do sweat, *Rock Band* drummers develop stronger arm muscles, singers learn to hold a note longer and with sustained pitch, and *Guitar Hero* guitarists read and follow a musical score and learn to make fast and accurate cord changes. With technologies supporting players' embodied competence, rather than players' ability to simulate such competence, we may be on to something.

Are digital games good or bad for children? Well, it depends. From the perspective of actor network theory, what matters enormously is the specific system and context of activity, what is required by and afforded to agents through tools and technologies, social involvements, strains and supports. And it depends upon what we are looking for. It may well be that so long as we look myopically for a testable, demonstrable increase in students' mastery of traditional school knowledge and skills, and if we restrict our conceptions of videogames to violent first-person shooters, we'll find that more is lost than gained from videogame play. Identifying and studying the many and varied networks of affordances digital gameplay offer, particularly in this technologically enabled re-embodiment of play from simulation to imitation, may offer genuinely productive avenues for research and educational practice that take into account the dramatic and profound transformation of knowledge and of learning in a networked society. |



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Notes

- 1 Bruno Latour, *Reassembling the Social: An Introduction to Actor-network Theory* (Oxford: Oxford University Press, 2005).
- 2 S. de Castell, and J. Jenson, "Serious Play," *Journal of Curriculum Studies* 35, no. 6 (2003): 649-665; S. de Castell and J. Jenson, "Videogames and Digital Game Play – The New Field of Educational Game Studies," *Orbit* 35, no. 2 (2005); J. P. Gee, *What Video Games have to Teach us about Learning and Literacy* (New York: Palgrave Macmillan, 2003); J. P. Gee, *Why Video Games are Good for your Soul: Pleasure and Learning* (Melbourne: The Learner, 2005); M. Prenksy, "Don't Bother Me Mom – I'm Learning," (New York: Paragon House Publishers, 2006); K. D. Squire, "Rethinking the Role of Games in Education," *Game Studies* 2, no. 1 (2002). Available at <http://gamestudies.org/0201/Squire/>
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- 4 C. A. Steinkuehler, "Massively Multiplayer Online Videogaming as Participation in a Discourse." *Mind, Culture & Activity* 13, no. 1 (2006): 38-52.
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