

Citation:

Santo, R. (2011). *Contested Notions, Conflicting Agendas, and Carmen San Diego. Mind, Culture, and Activity*. doi:10.1080/10749039.2011.564714

**Contested Notions, Conflicting Agendas, and Carmen San Diego** A review of **Engineering Play: A Cultural History of Children’s Software**, by Mizuko Ito, Cambridge, Massachusetts: The MIT Press, 2009, 224 pp., \$24.95 (Cloth).

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The educational and learning lives of youth receive more than their fair share of society’s techno-centric hopes and fears. Visions of technological panaceas to our ailing public school system persist in the public discourse around educational reform in the United States. Simultaneously, current anxieties over what new media “is doing” to childhood are equally rampant, with powerful popular narratives around online safety, fractured attention, and a decline of “real” sociality regularly cropping up in the news. Ito’s *Engineering Play* does a service to both of these tendencies, pulling heads out of the clouds while avoiding discourses of fear. The book offers educators, researchers, and policymakers a powerful sociocultural framework through which it describes how things actually play out when you add people, commerce, and culture into the work of understanding and rethinking childhood learning lives in an increasingly technologically mediated world.

*Engineering Play* focuses its analysis on how the children’s software movement of the 80s and 90s acted as a site for cultural negotiation about the role of play in childhood. During this period, differing notions of play came into contact and conflict, an interaction that has major implications for the way that we consider technology’s role in learning today. Rather than focusing on the technology itself, Ito steps back and documents how three distinct narratives around childhood – narratives of achievement and success, fun and popular culture, and creativity and technical mastery – manifested in the design, marketing, and uptake of a variety of software titles that dotted the educational landscape during these decades.

Ito describes what she sees as three corresponding media genres – academic, entertainment, and construction – that emerged out of these preexisting childhood narratives. Ito dedicates a chapter to each of these genres and describes the history of the genre, various software titles that characterized the genre, the marketing and distribution mechanisms that surrounded these titles, and the uptake of these games in the afterschool environment of a local 5th Dimension (5thD). In the course of telling the social story surrounding a set of technologies, *Engineering Play* also tells the tale of how progressive learning agendas can be co-opted by the reproduction of class identities through media. Beyond the many nuanced details and analyses it provides about the culture of children’s software, the book is an exploration of how a particular moment in time can shed light on the failings of a techno-centric approach to educational reform.

In her chapter on the academic genre, Ito describes how a new space in children’s software emerged in the early 80s that spoke to the achievement anxieties of middle-class parents – anxieties that stemmed from the ideologies of behaviorist-oriented educators. The chapter describes how this media genre exhibited schooling-centered mentalities about

progress and success in its designs and marketing. Included in this genre are age-graded titles such as *Jump Start*, *Math Blaster*, and *Reader Rabbit*, all products that had a strong orientation toward delivering content relevant to academic disciplines like math, reading, and science. Ito examines the packaging and advertising of games in this genre for the ways in which they speak to middle-class values of achievement; she also considers how these games were marketed to convey clear messages about the game's benefits for children's academic lives. The software titles are also analyzed by Ito to show how popular culture idioms like shooter games were paired with skill and drill approaches to instruction in titles like *Math Blaster*.

A good portion of this chapter is spent examining how *The Island of Dr. Brain*, a puzzle-oriented adventure title, mobilized narratives of "competition, achievement, and knowledge display," and how these values sometimes conflicted with those of the 5thD space. It describes how kids readily recognized the kinds of participation valued by the software and how these youth "gamed the system" with mentors who inevitably played into narratives of achievement, even though these mentors aimed to embody a non-competitive, progressive educational philosophy consistent with 5thD's goals.

Whereas the first section on the academic genre of games describes an outgrowth of school-oriented achievement discourses that mobilized an entertainment "sugar coating," Ito's following section on the entertainment genre of games shows how this genre evolved in relation to mainstream popular culture (such as movies, television, and video games) and, to some degree, in reaction to the academic orientation of earlier children's software. The section outlines a class of software, including titles like *Pajama Sam*, *Putt Putt*, and *LEGO* products that aimed to produce experiences that spoke to the fun and pleasure-seeking desires of kids, and at the same time to parents wanting those sorts of experiences to be wholesome and pro-social. The chapter describes how advertisements for entertainment games, like academic games, were oriented toward middle- and upper-middle-class values; however, advertisements for entertainment games conveyed a more child-centric tone. A quote from a software magazine, "Nobody understands kids like Humongous Entertainment" appeared on the ad for *Putt Putt Joins the Circus* and was emblematic of the genre, which was marketed to a more progressive or permissive parent who thought of childhood as a time for cultivating wonderment and joy more than progress and success.

The chapter includes a fine-tuned and in-context analysis of *The Magic School Bus Explores the Human Body*, which is positioned as a transitional title lying at the intersection of the academic and entertainment genres. The title retained a strong school-oriented focus in terms of content, but the graphics leveraged a kind of child-centered fun with "wacky" illustrations that resembled children's television culture. In what is perhaps one of the most poignant concepts highlighted in the book, Ito shares how the dual orientations, academic and entertainment, of the *Magic School Bus* title sometimes led to what she calls "micropolitical resistance" to adult-oriented values. She notes how entertainment-oriented interactive special effects (such as squishing noises that users activate by clicking on select graphics) were not connected to the larger academic goal structure of software and served as nominal spaces of resistance to progress-oriented goals that youth perceived in the software title and through interaction with local mentors. In one instance, a 5thD youth's gleeful and repetitive clicking on "gross" sounds drove a remarkably patient mentor to urge the youth to move on to more "educational" parts of the software. For designers and educators, this is a key insight into the importance of not decoupling "fun" and "learning" in educational design and a lesson in the importance of understanding youth motivation.

In the final section on the construction genre of games, the book focuses on the

virtual urban planning simulation game, *SimCity 2000*, as a paradigmatic example of children's software that aligns with the constructionist visions of Seymour Papert. In the constructionist view, computers are not seen as a means for "programming the child," as Papert notes, but as a tool for creating a space where youth are empowered to realize their own visions via technological mastery. The chapter lays out a detailed backdrop of the counter-cultural traditions within the hacking (not the illegal kind) and "Do It Yourself" (DIY) communities, which are characterized by an empowered stance towards technology. Alongside it, Ito includes an important analysis of gender identities in this space, examining contemporary shifts toward greater gender diversity as technologies grow to offer more avenues for multimedia authorship. In an analysis of its use in the 5thD, Ito shows how *SimCity* afforded opportunities for deep mastery and expert identities for older boys who developed a subversive learning culture around the game.

Perhaps the greatest strength of the book is its ability to move seamlessly between different levels of analysis and to artfully integrate them. Ito traces how the "circuit of culture" moved from macro to micro levels – from the ideologies of progressive educators, pressures on commercial publishers, and parents' expectations of childhood to the face-to-face conversations between children and adults sitting side by side in front of a computer. Both levels of interaction are well explored; background and context from cultural theorists and researchers are coupled with industry history and interviews, both of which are complimented by and validated in line-by-line analysis of interactions between participants.

However, in moving to a more anthropological analysis, which is less common in educational spaces, the book perhaps swings the pendulum too far from approaches that aim to document design principles and outcomes. It may have missed an opportunity to tackle questions of how to promote progressive educational design and social justice, while still situating those within a broader learning ecology and set of cultural narratives. Ito artfully describes a cultural landscape, but only hints at ways we might aim to change it – a classic anthropological problem. Those interested in designing games and spaces based on the perspective offered in the book are left without a roadmap. Perhaps, though, this is outside of the scope of a book that is focused on a cultural history.

As an activist educator, I would have liked *Engineering Play* to include more design-oriented advice; however, Ito does deliver on her promise to show how a heady period in the world of digital media and learning failed to live up to its potential. The book illuminates how innovation was stymied at the hands of market demands, parental expectations, and historical narratives of schooling and progress.

Readers involved in the current resurgence of interest in digital learning have much to gain from the history outlined in *Engineering Play*. The cultural narratives described in the book are still circulating and evolving, with the contemporary digital media and learning landscape increasingly promoting the lessons of the constructionist genre as an alternative to more conservative educational practices. And yet, many are still falling into the trap of technocentricism that this text implicitly warns against. *Engineering Play*, aside from a compelling story, offers stakeholders a more nuanced way to understand how institutions, social practices, and prevailing norms actually interact with new technologies. If more decision-makers in this field follow Ito's lead and approach their work from a cultural and historical framework, conversations around digital learning might expand beyond technologies and curricula to address broader systems and ecologies. Without such an expansion, we can expect to see more of the missteps described in *Engineering Play*.