From Laptops to Toasters:
Designing and Repairing Modern Childhood Imaginaries

Morgan G. Ames
Informatics and Computer Science
University of California, Irvine
Irvine, California, USA
aoir@morganya.org

Daniela K. Rosner
Human Centered Design and Engineering
University of Washington
Seattle, Washington, USA
daniela@ischool.berkeley.edu

Abstract

We introduce two case studies that illuminate a particular way of conceptualizing childhood and technology: the One Laptop Per Child project and the East Bay Fixit Clinic. Both cases borrow narratives of childhood from contemporary American culture and ideas of technological potential from computer cultures. The resulting narrative is grounded in the personal childhood experiences of those involved in the communities, and their desire to provide the same kinds of experiences to children today. We highlight some of the dimensions of this narrative as well as some of its limitations in appealing to, and re-creating, a particular kind of child that resembles the (technically-inclined and often male) organizers themselves.

Keywords

design studies; technology and childhood; technology and education; OLPC; maker culture; hacker culture.

Imagining Childhood, Technology, and Design

Our research explores the contested role of technology in childhood and the role of childhood, in turn, in technology development. Today's dominant narrative of restraint, often discussed as "screen time" in the United States, projects technology as a danger to what is most valuable about childhood. However, various counter-narratives pose technology as the harbinger of intellectual exploration and creativity, proclaiming the potential for children to use technology in transformative ways.

These modern imaginaries, even when seemingly opposed, often share common conceptions of childhood as a period marked by intensive, even ecstatic, creativity, exploration, and play. Though seemingly pervasive, these conceptions are historically, geographically, and socioeconomically situated, beginning with mid-nineteenth-century shifts in understanding of childhood and reform efforts to protect children in Europe and the United States (Hoffman, 2003; Zornado, 2001) and finding its stride in middle-class parenting culture in the United States (Ames, Go, Kaye, & Spasojevic, 2010; Lareau, 2003; Yardi & Bruckman, 2012). Where these narratives diverge is on whether the use of screen technologies such as computers help or hinder this conception of childhood.

In this paper, we interrogate two projects that share a common counter-narrative of childhood and technology grounded in computer engineering culture: the One Laptop Per Child (OLPC) project and the East Bay Fixit Clinic. While OLPC created a physical artifact (laptop) and the Fixit Clinic structures interactions with facilitated repair activities, both projects are motivated by the same kinds of cultural ideals centered on defining what it means to be a child and the forms of individualism, creativity, and empowerment technology provides to childhood.

In particular, we examine the question of what kinds of children the groups are designing for, and what kinds of subjects the projects' design and repair activities are producing as a result. We show how members of each group base their ideas of childhood, and of technology's role in it, on their own nostalgized childhood experiences, often treating these experiences as universals. In doing so, both groups are, in effect, attempting to reproduce their own childhood experiences by designing the kind of childhood they hope to see in their beneficiaries: one that is full of pedagogical experiences involving technology that would engage precocious, scientifically-inclined, often oppositional, and often male elementary or middle school students.

This counter-narrative reinforces certain identities and values that circulate within the professional computing community more broadly, reflecting the way that childhood is imagined and articulated through the design process across multiple academic-industrial settings. Identifying and exploring the cultural roots of this counter-narrative of childhood and technology allows us to critically examine the relationship between the designer, the artifact/experience, and the imagined 'user' they create.

Both of these case studies stem from our ongoing research exploring the cultural underpinnings of design. In exploring the OLPC project, the first author juxtaposes archival research on the forty-year development of the "Children's Machine" with ethnographic observations of a OLPC project in Paraguay. In exploring the Fixit Clinic, the second author situates the daily practices of the organization into the "Maker" community in the San Francisco Bay Area and beyond. Both primarily rely on ethnographic inquiry in their methods and literature in science and technology studies for their theoretical framework.

Case One: One Laptop Per Child

OLPC's XO laptop is the first of its kind to combine a rugged design, an open-source educational software suite, and full – if purposefully underpowered – computer functionality. The ideas that OLPC's early leadership had about childhood and learning, strongly influenced by the stories they tell about their own childhoods and scholastic experiences, determined a number of features of the XO and the educational theory on which it was based, constructionism (Papert, 1980, 1993).

In particular, many involved or interested in the project, including MIT professors and OLPC founders Seymour Papert and Nicholas Negroponte, have stated that they were inspired to work on OLPC based on a nostalgic rendering of their own childhoods – specifically, the narrative of rejecting traditional education and teaching themselves how to program a computer (Negroponte, 1996, 2006; Papert, 1980, 2006). The parallels between constructionist learning theory and MIT's early hacker community influenced the development of OLPC's laptop, particularly the ideas that the best learning is playful and self-directed and the best machine for learning – or "tool to think with" in Papert's terms – is a computer like the ones OLPC's developers themselves used as children. These powerfully important narratives, present not just among OLPC developers but in technological circles more generally, had material effects in guiding the design of the laptop and decision-making about the priorities of the organization. They also are the source of much of the laptop's allure in the broader technology community, especially in the early years of the project.

Case Two: The East Bay Fixit Clinic

Roughly once a month, small groups of volunteers from the Fixit Clinic, located east of San Francisco, gather at local museums, libraries and other public venues to help visitors fix their broken stuff. As part of a larger network of repair organizations (e.g., Repair Cafe, Fixers Collective, and Restart Project), the Clinic brings together environmentalist ideals with collaborative work. Toasters that no longer heat, bluetooth devices without signals, and leather boots with missing soles come to function again with screwdrivers, soldering irons, or needles and thread. Through the disassembly and reassembly of consumer products, the production and maintenance of repair practices surfaces cultural orders of individualism and technological progress.

The figure of the precocious middle school student is central in this operation. While many visitors to the clinic are retired and over the age of 60, children are regularly present with their parents in tow, and are regularly featured in press materials. The child visitors, most of whom are male, are seen to embody the Clinic's mission: to foster and enrich young minds, instilling in them a curiosity for electronic tinkering that is reminiscent of the Clinic coaches' own childhood imaginaries. Children's broken remote control cars and airplanes come to be pivotal fixtures of the Clinic's ultimate challenge: making makers.

Differing Goals, Common Narratives: Re-imagining Childhood, Technology, and Design

In our work on both of these projects, we observe a slippage between designer's conceptions of users and 'users' conceptions of themselves. Through this, we chart how cultural narratives emerge as part of day-to-day technosocial assemblages. We further unravel the larger cultural infrastructures that support and enable design communities through the material effects these narratives can have, especially the paradox between the rhetoric of possibility and the unspoken limits they build. This work highlights the moral responsibility of designers and technologists for the communities they hope to reach and the new stakes of technological imaginaries. How OLPC and Fixit Clinic organizers envision themselves is not only important to what they do, it is an articulation of their identities, which in turn motivates and defines their work the impacts they hope to have on the world.

Acknowledgments

References

Ames, M. G., Go, J., Kaye, J. J., & Spasojevic, M. (2010). Understanding Technology Choices and Values through Social Class. *Proc CSCW 2010, ACM Press*.

Hoffman, D. M. (2003). Childhood Ideology in the United States: A comparative cultural view. *International Review of Education*, *49*(1-2), 191–211.

Lareau, A. (2003). *Unequal Childhoods: Class, Race, and Family Life*. *2003*. University of California Press.

Negroponte, N. (1996). *Being Digital*. New York: Vintage Books.

Negroponte, N. (2006). No Lap Un-Topped: The Bottom Up Revolution that could Redefine Global IT Culture.

Papert, S. (1980). *Mindstorms: Children, Computers, and Powerful Ideas* (p. 230). New York: Basic Books, Inc.

Papert, S. (1993). *The Children's Machine: Rethinking school in the age of the computer* (p. 242). New York: Basic Books.

Papert, S. (2006). Digital Development: How the $100 Laptop Could Change Education. *USINFO Webchat, via OLPC Talks*. Retrieved from http://www.olpctalks.com/seymour_papert/seymour_papert_usinfo.html

Yardi, S., & Bruckman, A. (2012). Income, Race, and Class: Exploring Socioeconomic Differences in Family Technology Use. *CHI '12*.

Zornado, J. L. (2001). *Inventing the Child: Culture, Ideology, and the Story of Childhood*. *Childhood A Global Journal Of Child Research*. Garland Publishing.

License