

# Story Time for the 21st Century

*An interactive book-reading system couples videoconferencing with paper books and interactive content to help grandparents read with their grandchildren over the Internet.*

Over the past 18 months, a team of researchers at Nokia Research Center has been investigating how families help children keep in touch with distant relatives. As part of this investigation, we developed several prototypes to support connected families; here, we present an overview of our ethnographic research and describe the Family Story Play concept, a design for improving long-distance family togetherness. Story Play is an interactive book-reading system designed for two-to-four-year-olds that couples videoconferencing with paper books and interactive content to help grandparents read with their grandchildren over the Internet. Story Play is designed to improve the amount and quality of interaction between children and distant relatives by grounding interactions in shared activities.

Rather, we design for children in their larger social context, taking into account family dynamics and how parents and others guide and scaffold children's activities. Ethnographic methods provide a rich understanding of current family practices and inform our work to support today's families. Our goal is to design technologies to meet the needs of all family members together—the youngest and the oldest—as a social group.

This article is based on several threads of research. In earlier publications, we described findings from ethnographic research on the benefits and challenges of video communication<sup>1</sup> and later presented Family Story Play<sup>2</sup> along with preliminary results of its potential to enhance both family communications and children's literacy development. This article takes a step back and tells an overarching story about families who live with and facilitate the relationships of their own connected youth. It also articulates how families' needs point toward a new design space for connected youth, and our description of Story Play illustrates how new solutions can help long-distance families create a sense of family togetherness even when they're apart.

## Family Communication Today

Alex, age seven, is on the phone with his grandmother. They've arranged these phone calls every Sunday for the past couple of years because it's important to his "nanna" to feel like

Rafael Ballagas, Hayes Raffle,  
and Janet Go  
*Nokia Research Center, Palo Alto*

Glenda Revelle  
*Joan Ganz Cooney Center*

Joseph Kaye, Morgan Ames,  
Hiroshi Horii, Koichi Mori,  
and Mirjana Spasojevic  
*Nokia Research Center, Palo Alto*

Although there is an emerging trend in simplified and specialized technologies to support elders in distance communication, children's needs generally haven't been addressed. Recognizing the importance of understanding children's activities in the context of their social environment, we don't design for a child in iso-

they're still connected, even though they're hundreds of miles away. Alex is lying in bed with his feet in the air, kicking the blinds on the window. After a few minutes of yes or no responses, he suddenly says, "Eric can talk to you. Here's Eric, okay?" and runs over to the other bed where his brother is playing a game of Boggle Jr. with their parents. As an afterthought, he quickly chirps "Zai zhen" into the phone, saying goodbye in Chinese as his dad has taught him. After handing the phone to his younger brother, Alex runs downstairs to get back to his Pokémon show.

Eric, age four, continues to move his game pieces while holding the phone to his ear. "Can you say hello to your nanna?" his dad prompts. "Hello, Nanna," Eric says into the phone. He asks how she is in Chinese: "Ni hao ma?"

His mom leans in and whispers, "Tell her about bowling."

"We went bowling, and I got a strike...."

As this vignette illustrates, family communication exists within a rich social world. In our background research, we explored how families stay connected, especially young children with their grandparents. As part of a broader ethnographic inquiry,<sup>1</sup> we recruited 22 diverse families, resulting in 77 local participants (39 children ages two to 11, 36 parents, and two grandparents) and 39 remote family members. In the first phase of our research, we took a broad look at the lives of families. A typical visit involved spending an afternoon or evening with them, interviewing parents about technology and keeping in touch, and asking children to share through a "People in My Life" activity and tour of their rooms. We then asked to observe communication as it might normally occur between a child and his or her distant family members. Most families used a telephone to connect, but we noticed an emerging theme of people using video to help

young children connect with distant relatives. We followed up with a second phase of research that focused on family videochats between grandchildren and grandparents.

### **The Challenges of Keeping in Touch with Telephones**

In our initial study, 88 percent of the families (16 out of 18) used the phone as their preferred way of keeping in touch with remote relatives, especially for children with grandparents. Although many parents and grandparents use other communication technologies (such as e-mail, text messaging, blogs, and social networks), the phone is still the primary way of communicating when children are involved. However, when we observed family communication over the phone, we saw that it wasn't well suited to young children, presenting a range of developmental and social challenges.

In face-to-face conversation, children and adults aren't limited to communicating through words alone—they also communicate nonverbally, through facial expression, body language, gestures, and physical touch. Unfortunately, these channels are missing over the phone, and without them, children can have difficulty staying engaged. Many kids who were normally talkative in face-to-face conver-

sation became quiet or reluctant to talk on the phone, regressing to yes or no responses.

In addition, many of the conventions of using a telephone (taken for granted by adults) don't come naturally and need to be learned by young children. For example, children often have trouble holding the phone in the correct position, sometimes speaking away

from the mouthpiece or even holding it away from their ear. Children also struggle with the art of conversation—specifically, turn taking, asking questions, listening, and storytelling—highlighting telephone conversation as yet another skill with associated literacies to learn. Developmental researchers have noted that children under five years old might lack the ability to take another's perspective and rely on "here and now" topics of conversation.<sup>3</sup> Children in our studies often exhibited these limitations, sometimes gesturing to objects in the room to communicate an idea, seemingly unaware that this would be lost on the remote party.

Parents and grandparents were clearly motivated to maintain a bond between their children and long-distance relatives, but the children weren't always motivated to interact over the phone:

*He doesn't like it on the phone... he's not really into it, doesn't like talking. [He's] just too young, I think. He doesn't like talking, answering questions. (Mother, family 16, child age 7.)*

For almost all the children we observed, a family phone call was an unenjoyable event that seemed more like a duty. (Although some precocious chil-

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**In face-to-face conversation, children and adults aren't limited to communicating through words alone—they also communicate nonverbally.**

dren older than seven were notable exceptions.) Children's words and actions suggested a reluctance to talk, and that despite parents' and grandparents' aspirations, they didn't feel connected to the remote party on the line.

Another clear challenge for families was in knowing what to talk about. Lacking a continuous shared experience to draw on, both children and

grandparents needed help finding topics of conversation. For their part, parents often played a role by scaffolding the conversations, such as prompting their children to tell a specific story or preparing grandparents with questions before handing the phone over. Some successful grandparents reached for verbal playfulness as a way to engage younger kids. We observed many using absurd talk or outright silliness to keep children engaged.

The one-to-one nature of phone communication and the low volume

offered several benefits for family interaction compared to phone conversation, while presenting some of its own unique problems.

The visual nature of video makes it more like face-to-face conversation, so it's easier for children to express things through actions instead of words. Video supports nonverbal communication such as gesture and body language. Video is also less abstract than telephone: in contrast to the telephone, talking to a picture of a face on screen seemed much more nat-

gaged in visual jokes like trying to pass a pencil through the screen.

Although the challenge of holding a phone in place doesn't exist with videoconference, it's replaced by the challenge of staying in the camera's field of view. This proved to be a problem not just for children but also for some grandparents and is exacerbated because the camera's field of view differs from the user's. Some parents complained about the fixed position necessitated by videochat. (Even though many of the families chatted on laptops, we rarely observed them moving the laptops during a call.) Some children also showed impatience with needing to be in a single place: they squirmed free from parents' laps or sometimes ran around during a call. In addition, videochat was less reliable than telephones (both audio quality and connection reliability), which could interrupt the flow of a conversation, resulting in distracted children.

Although children were generally more motivated and engaged in family videochats than they were in phone calls, some of them still had trouble, evidenced when they got distracted, made faces, or otherwise sulked at some point in the call. These findings suggest several opportunities to improve families' ability to share experiences over a distance.

### Designing Shared Activities for Family Communication

On the basis of this fieldwork, we came up with a series of design solutions that build on the opportunities and challenges we identified. Family Story Play<sup>2</sup> is one project in this series of investigations into improving tools for long-distance families to connect with each other. Story Play builds on the successes of videoconferencing technology and attempts to offer both content and context to support shared activities and promote play among distant family members. In a departure from traditional com-

## The one-to-one nature of phone communication and the low volume of phone calls limit the opportunities for children to learn the art of phone conversation.

of phone calls limit the opportunities for children to learn the art of phone conversation because they usually only hear one half of a parent's phone call, devoid of conversational context. Similarly, when children speak on the phone, parents can't play their customary role as adaptive scaffolds because the children must converse on their own. A few parents discovered that speakerphones helped them step in to repeat questions or otherwise clarify, and one parent noted that speakerphone helped her child peripherally participate as a part of the group interaction. However, most parents didn't use a speakerphone for family calls.

### Family Videoconferencing

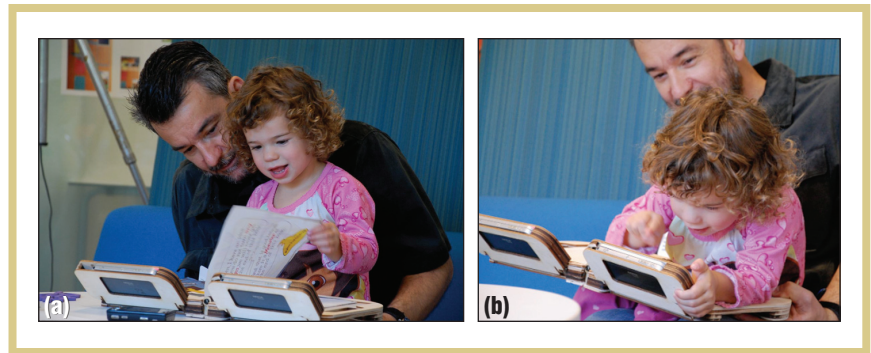
Six families in our initial study had tried videoconference (typically Skype or iChat) to communicate with grandparents, prompting the second study, which focused on seven families who use videoconferencing for regular family communication. All reported feeling motivated to use video to include children on calls with their grandparents. We found that video

ural to children than talking to a piece of plastic held in the hand. While on video calls, children were able to assert their participation or introduce topics of conversation by presenting objects, such as a favorite lunchbox or pet. They could read their grandparent's smiles and in turn communicate through body language.

In addition, videochat supported group interactions. Children participated as part of a larger family interaction in which they both observed and actively participated. A sense of shared context helped adults scaffold and guide children's participation, with both verbal and nonverbal cues that related directly to what was going on at any given moment. As with speakerphone, videochat allowed parents to aid the conversation by prompting and clarifying as needed. Grandparents were also able to gauge their grandchildren's reactions better and give them continuous feedback. Video also seemed to create opportunity for more playful, embodied interactions. Families exchanged "Skype kisses," struck poses for the camera, and en-

Figure 1. Story Play scenario.

- (a) Marie and her dad read together with Grandma over videoconference.
- (b) Marie engages Elmo to make him talk about the page.



munication tools, our design orients families around a physical book that they can read together over videochat. Story Play also incorporates a familiar character—*Sesame Street*'s Elmo—to help engage children in a family activity. Support is provided to grandparents in different ways—for example, the system includes tips on how to use books to spark conversations with young children.

To confirm our design rationale, we conducted a study in our lab of eight families who used Story Play to communicate, concentrating on several areas of particular relevance to family communication.

### Scenario

Marie and her father are using Story Play to read a story with Marie's grandmother, who lives out of state. Marie is two and a half years old and visits her grandma about four times a year. At their regular evening reading time, Marie (along with her dad) and her grandma each open their Story Play devices. Grandma touches the photo of Marie on her device to call her granddaughter. Elmo says to Marie, "Ring, ring, ring! Someone special is calling. Touch the green button to answer the call." Marie touches the green button on the screen and then sees and hears her grandma say hello. Marie waves, and then Grandma asks if Marie is ready to read a bedtime story.

Dad helps point to the text in the paper book as Grandma reads on the other end. He sees icons of Grandma's current page next to her video image, and when Marie turns too far in the book, he turns the pages back for her and explains where Grandma is reading.

Grandma reads, "You turned the page!" Marie is reading along, when suddenly "Ding!" Elmo's thought bubble appears. Marie touches Elmo (see Figure 1) and everyone listens to him ask, "Oh, boy! Now Grover is speaking very loudly! How do you think Grover feels?" Grandma asks, "Did you hear what he said?" and Marie answers, "Grover is scared."

During the story, dad and Marie mimic Grover, who is pictured looking exasperated, with his hand on his head. Dad takes Marie and the book in his lap and sits back. Marie touches Elmo's thought bubble, often at her dad's suggestion, and laughs along with his jokes or points to things in the book that he or Grandma ask about. After the story is over, Marie wants to show Grandma her puzzle pieces from earlier in the day, and they talk about puzzles before saying goodbye and closing their books.

### Design Rationale

Our fieldwork identified several opportunities to improve family communication, so we set out to design a new system to address specific family communication gaps. Video became a foundation for our design because it affords a shared context, allows everyone to express themselves through actions as well as words, and supports group interactions. The challenge was to structure the video communication so that interaction focused on shared (but structured) activities and play.

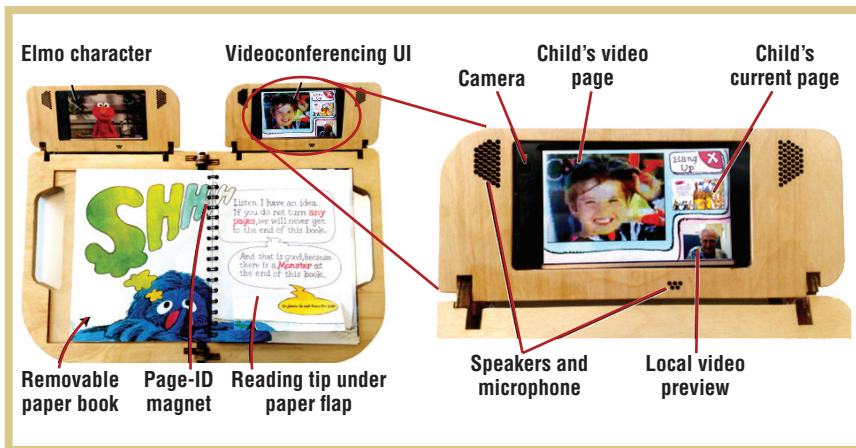
Book reading showed great potential as a shared activity because it's already

a ritual for most families, adults know how to do it, and the educational benefits motivate both parents and grandparents. The two-to-four-year-old age range is a critical time for establishing relationships with grandparents and for effective reading interventions. We chose to orient the shared experience around physical paper books to make reading more familiar, natural, and intuitive. Recognizing the importance of parental scaffolding in the fieldwork, we explicitly designed our system to be used by children and a collocated parent, along with a remote grandparent. We wanted parents to help children follow the story and for all members to use the system together as a shared family experience.

In so doing, we learned from previous research in interaction design for children, videoconferencing, and interactive agents. For example, the International Children's Digital Library (ICDL) has projects to adapt and enhance digital books as a shared activity to structure intergenerational interactions;<sup>4</sup> Sharetable connects children with remote family members using video of a table surface as shared context;<sup>5</sup> and the design of Elmo builds on work in conversational agents in virtual environments.<sup>6</sup>

The resulting design, as shown in Figure 2, includes a paper book, two digital touch screens, a sensor-enhanced wooden housing, videoconferencing technology, and video content of Elmo. Because we observed in our study that reading was a family activity that often took place in





**Figure 2. The Family Story Play system.** The wooden housing uses magnetic switches to detect magnets on each page. A custom video conferencing client reads page sensors over USB and transmits page information to the remote videoconference partner.

bed just before bedtime, we designed Story Play to fit comfortably on a lap and to be portable and book-like. The book housing can be folded and has a handle for easy carrying, which helped parents in our study position the book to keep children in the camera's field of view. Paper books can be removed and replaced—the system automatically identifies the book title. Page information is exchanged between locations using sensor technologies and a custom video client GUI. The remote grandparent can see the child's current page, easing coordination. When children get lost, the collocated parent can help them get to the right page.

We designed specific features to support and encourage reading in a dialogue-oriented manner. A five-minute instructional video for grandparents, hosted by *Sesame Street*'s Maria, introduces 10 strategies to promote dialogue while reading books with children. Video clips of parents reading to young children bring the tips to life; the tips are also embedded in the grandparent's book under small paper flaps with techniques for the specific book they're reading (for example, "Ask 'What' Questions. *What do you think Grover is doing with that hammer?*"). This kind of reading style directly supports conversation topics with young children and is proven to have significant educational value in helping support children's vocabulary gain and later literacy development.<sup>7</sup>

Elmo is designed to support successful conversations between children, parents, and grandparents in a number of ways. Because we wanted to make Elmo as lifelike and engaging as possible, he's portrayed through video footage, which required video production with the original Elmo from *Sesame Street*. Production footage of Elmo includes commentary on user interface actions, such as calling grandma, as well as reactions to every page in the children's classic *The Monster at the End of This Book*. Other videos include idle scenes in which Elmo appears to be attentively listening to the child and frequently gazing toward the physical book, as well as miscellaneous activities such as laughing, dancing, and giving yes or no responses. On the basis of user input, the system weaves these video clips into the call where appropriate to create the impression that Elmo is part of the video chat.

Elmo guides children and adults through the process of creating a videochat connection, explaining options and providing verbal instructions. At the home screen, he asks, "Who do you want to read with? Touch the picture of the person you want to call." Although collocated parents are there to scaffold the interaction, Elmo makes the user interface approachable for kids so that they can initiate and establish the video connection themselves with adult supervision.

Once connected, Elmo models an interest in reading to encourage children's interest and motivation. For example, after a connection is made, Elmo yells, "Yaaaaay!! We're all going to read a book together!" While reading, Elmo is designed to be engaging but polite, so as not to overshadow family members. Thus, his actions are synchronized symmetrically for both the child and remote grandparent. When both parties' physical books are on the same pages, a thought bubble displayed above Elmo indicates that he has an idea and wants to talk about the book. (The system uses the page information from the magnetic sensors in the wooden housing to determine Elmo's response.) This interaction design is also meant to encourage children and grandparents to read the same pages at the same time. Touching Elmo on either side of the videochat activates Elmo on both sides of the videochat.

Perhaps most important, Elmo prompts children and grandparents to talk to each other about the book: "When Elmo makes a mess, Elmo's mommy helps him clean it up. When you make a mess, who helps you clean it up?" or "Elmo loved that story! What was your favorite part?"

### Prototype Evaluation

Our design rationale represents our best intuition on strategies to address the issues identified in our fieldwork. To fairly evaluate our design's success, we conducted a lab study to compare Story Play to a traditional videochat setup. With a small sample size, we performed an in-depth qualitative analysis to help identify the relative

strengths and weaknesses of the different family communication experiences and to inform our design of future iterations of the Story Play system.

Eight families with children between the ages of two and four, their parents, and grandparents (a total of 24 study participants) tested the system in a lab environment. We recruited participants across different income levels and ethnicities. All except one worked in nontechnology-related fields, and two families reported using videoconferencing in the past. To simulate distance in the lab, we separated the families: we put a parent and child together with a device in one room and a grandparent with an identical device in a different room. Each family participated in one remote reading session of *The Monster at the End of This Book* using Story Play and one reading session of the sequel *Another Monster at the End of This Book* using traditional books and standard videochat (Skype), with a short break in between. We chose the books to be as close as possible without being redundant in back-to-back reading sessions. We couldn't counterbalance the book titles because the Elmo content in the Story Play prototype was only suited for one title—instead, we counterbalanced the order of readings to mitigate order effects and videotaped all the calls. At the end of the sessions, we interviewed parents and grandparents and later analyzed the videos, coding for verbal and nonverbal markers of attention, engagement, coordination, and scaffolding behaviors (full details appear elsewhere<sup>2</sup>). Because the children were often tired during the second reading, we based our coded results primarily on the first sessions. A complete description of the results of this evaluation is outside this article's scope, so we report here on aspects relevant to the design of future communication systems for connecting families with young children.

### Comparing Story Play to Videochat

Both setups (reading over Story Play and reading over Skype) seemed to raise the quality and length of interaction, as compared to our field observations of family phone and video calls, suggesting that a structured activity such as book reading could be beneficial for family communication more generally. However, for children

of the Story Play pages, and children smiled or laughed on 78 percent of the Story Play pages, compared to parents smiling on 54 percent and children smiling on 30 percent of the pages in the Skype sessions.

Families were highly engaged for both Skype book reading and Story Play. (Children were slightly more engaged with Story Play, based on mea-

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## Interestingly, Story Play seemed to influence children's and parents' enjoyment more than grandparents'.

especially, Story Play appeared to provide additional benefit in several ways. Some parents expressed that with standard videochat, children had difficulties understanding that they were actually reading a book together with their remote relatives:

*"[Over videochat] there was no conceptual link for her, between her book and Grandma. That concept isn't there yet at that age, so she just doesn't—she didn't have that feeling that Gram was reading the book." (Father of 2.5-year-old girl, family 1.)*

This suggests that elements of the Story Play design (form factor, Elmo's role, synchronous nature) might be important to children's understanding of the shared activity.

Interestingly, Story Play seemed to influence children's and parents' enjoyment more than grandparents'. The latter expressed approximately equal levels of enjoyment with both the Skype and Story Play experiences (smiling or laughing on 63 percent of the Story Play pages and 67 percent of the Skype pages), whereas both parents and children showed distinctly more enjoyment of the Story Play experience than the Skype session. Parents smiled or laughed on 90 percent

of the time on average compared to 84 percent on Skype.) Elmo appeared to be one reason children were engaged with Story Play. They touched his thought bubble, on average, 68 percent of the time that it was available. Two of the four were engaged to an extreme, frequently moving their faces very close to the screen as if to rub noses or kiss him, saying "Hi, Elmo," or waving at the screen. In post-study interviews, some parents expressed that their children were more engaged with Story Play because of Elmo:

*"[Story Play] was good because it helped interact towards the book... I know every time he saw the light bulb, he went to press the button and he would actually listen a little bit and he would be talking about the book." (Mother of three-year-old boy, family 6.)*

### Elmo as a Mixed Blessing

Many of the smiles and laughs from children resulted from interaction with Elmo, and children demonstrated their excitement about Elmo by waving to him, greeting him, touching his screen, and through physical affection:

“Elmo? She loved it. You saw her. She tried to kiss him.” (Father of 2.5-year-old girl, family 8.)

Although Elmo did engage children, and many grandparents leveraged Elmo to get children to talk more about their own thoughts, some grandparents felt conflicted in their attitudes toward him. They liked the way Elmo brought up interesting questions for discussion, but sometimes felt they were in competition:

“Oh, I liked it. I mean [Elmo] brought up questions that I wouldn’t even ask.... He is a good influence, but when he beats me to the punch, that was kind of like a little distracting.”... “[My grandson]’s not even looking at me or I mean—I don’t know if he was even looking at the book. I think he might have been actually looking at

between Grandma and Elmo. So if you had their face—Elmo’s face on one and Grandma’s on the other—and they were interacting, that would be interesting.

Grandmother: I want to talk to Elmo.

Father: ‘Cause they’re already—the child’s already focused on Elmo. And again, with Grandma talking to Elmo, that brings the remote person into the story more. (Father of 2.5-year-old girl, family 1.)

Such findings suggest some promise in using a conversational children’s character for family communication with children, as well as considerations for their design in future systems, including how to best design Elmo to help a child attend to the right thing at the right time.

Such physical interaction didn’t occur in the Skype case, where parents were more hesitant to let the child touch the laptop, perhaps afraid that he or she would press the wrong key and break something.

Elmo over here, waiting for the ding or something instead of looking at the picture.... [M]aybe [Story Play] could be more of a distraction, but I think overall it’s better. It’s a better concept.” (Grandfather of three-year-old boy, family 7.)

Some grandparents wanted more control, including the ability to have a conversation with Elmo:

Father: The most relevant thing would be if it was talking to her live. If the interaction was

#### **Pretend Play over a Distance**

Some children engaged in pretend play with Story Play, suggesting that the system helped them emotionally connect with their remote grandparents despite the physical and technological barriers. For example, Gene and his grandmother (family 6, with a three-year-old boy) break a wall together, and then work to rebuild it:

Grandmother: Don’t fall, don’t fall!

Mother: Okay, ready, turn the page (page turning). Awwww,

man! What happened? Did they fall down?

Son: They all fall down!

Grandmother: Oh no! What happened, Gene?

Son: I don’t know, but we have to fix it!

....

Grandmother: We have to fix it, how are you going to fix it?

Son: I don’t know?

Mother: How are you going to fix it?

Son: I’m gonna do that (child points to a brick on the page).

Mother: You’re gonna build it again?

Son: Uh huh (son starts making hand movements as if he is moving bricks on the page).

Grandmother: You got to do one brick at a time...one brick after another (son starts making more pronounced hand movements, pounding on the book).

Mother: Are you fixing it?

Son: Uh huh.

The child physically engages with the book in rich ways—pointing at content, touching pages, handling hardware, and even pretending to build with the bricks on the page. Such physical interaction didn’t occur in the Skype case, where parents were more hesitant to let the child touch the laptop, perhaps afraid that he or she would press the wrong key and break something. This example also demonstrates the importance of having the



**Rafael "Tico" Ballagas** is a senior research scientist at Nokia Research Center in Palo Alto, where he currently combines his expertise in human-computer interaction and pervasive computing to design systems to improve family communication. Ballagas was a member of the development team for Motorola's Pagewriter 2000, the world's first two-way pager, which was ranked number 13 on *PC World's* "The 50 Greatest Gadgets of the Past 50 Years." He has a PhD in computer science from RWTH Aachen University. Contact him at tico.ballagas@nokia.com.



**Hayes Raffle** is a senior research scientist at Nokia Research Center, where he works to combine the simplicity of traditional object design with the flexibility of digital systems. His technical interests include industrial design, human-computer interaction, cognitive science, and conceptual art. Raffle has a PhD in media arts and sciences from the MIT Media Lab. He's also a member of the ACM and IEEE. Contact him at hayes.raffle@nokia.com.



**Janet Go** is a consulting researcher at Nokia Research Center. Her research interests include human-computer interaction and educational technology. Go has an MA in learning, design, and technology from Stanford University. Contact her at ext-janet.go@nokia.com.



**Glenda Revelle** serves as Senior Nokia Research Fellow in the Joan Ganz Cooney Center at Sesame Workshop and associate professor of human development and family sciences at the University of Arkansas. Her work ranges from collaborating on the conceptualization and design of *Sesame Street's* website and consumer software to extensive academic publishing of research on children's technology use. Revelle has a PhD in developmental psychology from the University of Michigan. Most recently, she contributed a chapter to *Mobile Technology for Children* (Morgan-Kaufmann/Elsevier, 2009). Contact her at grevelle@uark.edu.



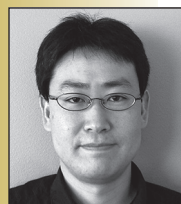
**Joseph "Jofish" Kaye** is a senior research scientist and ethnographer at Nokia Research Center. His current research includes studies of hacking and tinkering behaviors, digital gifting, the social life of cell phones, and summarization of microblogging content and sentiment. Contact him at jofish.kaye@nokia.com.



**Morgan Ames** is a PhD candidate in Stanford University's Department of Communication. Her current research explores the social meanings of new media technologies, with her dissertation focusing on the social meanings of the One Laptop Per Child project's "XO" laptops. In collaboration with Nokia Research Center, she has also explored the socioeconomic divides in family practices and parent attitudes around communication and media technologies. Contact her at storytime@morganya.org.



**Hiroshi Horii** is a senior researcher at Nokia Research Center. His current research includes family communication and new mobile user interfaces, specializing in the field of visual design and industrial design. Horii has an MS in industrial design from the Art Center College of Design. Contact him at hiroshi.horii@nokia.com.



**Koichi Mori** is a senior researcher at Nokia Research Center. His research projects and standardization activities focus on those related to graphics and user interface technology. Mori has a PhD in computer science from the University of Tsukuba, Japan. Contact him at koichi.mori@nokia.com.



**Mirjana Spasojevic** is a senior principal scientist and team lead in Nokia Research Center. In her role as a user research evangelist and a passionate advocate for very human mobile experiences, she focuses on ethnographic and lab-based studies of mobile technologies. Spasojevic has a PhD in computer science from Pennsylvania State University. Contact her at mirjana.spasojevic@nokia.com.

parent involved to enable remote play: the parent subtly verbalizes some of the child's actions (usually by asking questions) to help clarify his or her actions.

### Future Directions

In informing future iterations of Story

Play, it's helpful to think about the design along several dimensions. Social configurations are different ways to arrange people and media in a communication exchange. They help capture information about how communications are directed toward an intended addressee or audience and

are influenced by eye contact, gesture, and proxemics. We're currently tailoring the social configurations of Story Play interactions by providing adults with ways to interact more directly with Elmo—for instance, triggering simple yes, no, and laughter responses from Elmo to support grandparents



as they engage in simple dialogue with the character. The grandparent might say, “Elmo, are you ready to turn the page?” and then will trigger one of a series of canned yes responses, such as “Elmo thinks so.” Another social configuration is collocated reading—basically, Story Play without videochat—in which a parent can leverage Elmo to support child engagement and richer dialogue during more traditional parent-child reading configurations. By modifying social configurations, we can provide flexibility in using programmatic content to help adults and children engage with each other.

Form factors can also be varied in several ways to highlight different use cases and address different aged children. For example, our dual-screen Story Play design has pros and cons, so a single-screen solution could improve certain interactions. Situating Elmo next to the grandparent on the same screen might address grandparents’ sense of competition with Elmo because even when the child is laughing at Elmo, he or she will be making eye contact with the grandparent. Other form-factor investigations include a laptop<sup>8</sup> or an e-book model, which will trade the physicality of paper books for technical improvements such as the ability to synchronize page turning and easily choose new books from digital libraries. Looking back, our choice to use the same physical interface for both the child and grandparent was probably suboptimal. It would be beneficial to explore an asymmetric design in which the grandparents’ interface could be more appropriately styled for the grandparent experience with a larger screen and less of a toy-like feel.

Temporal modes of communication are critical choices for distant families—for example, asynchronous communication modes (record/playback) could help distant families mitigate scheduling challenges introduced by busy schedules or different

time zones. Although simple story recording and sharing technologies already exist, a key challenge in such designs is to give the grandparents emotionally rich feedback of the child’s experience as motivation for more interaction.

Finally, we’re exploring ways to support other kinds of shared (non-book) activities for family communication. We’ve created a series of prototypes for distance play, building on our observations of successful pretend play for children in our Story Play studies. Designs including networked physical see-saws, networked actuated hand-puppets, and a computerized jack-in-the-box toy leverage play patterns from traditional toys to structure asynchronous video communication between grandparents and toddlers. Games (both physical and digital), shared meals, and even watching TV together also have potential to promote a stronger sense of family togetherness over a distance.

Most of today’s communication tools don’t meet the needs of society’s youngest and oldest members, and creating shared activities for distant families can lead to new kinds of family connections. Our goal has been to describe the landscape of family communications today and to suggest how new kinds of toys and tools can improve “family togetherness” for geographically distributed relatives in the future. Family Story Play illustrates that technologies based on existing family practices and rituals can help bring people together with shared activities over a distance. This work is just the beginning of an exploration into the emerging domain of family communication. We believe there’s great need and opportunity to help the young and the old connect with the people in their lives who are most important to them—their families. ■

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