

# **Bilingual By Design**

## **A Design Study of Toy Design and Material Play Culture for Children Bilingual in French and English**

Nadya A. Direkova  
B.A. (magna cum laude) Political Science and interdisciplinary Media Arts,  
Amherst College, May 2001

**Submitted to the Comparative Media Studies Program  
in Partial Fulfillment of the Requirements for the Degree of  
Master of Science in Comparative Media Studies**

at the Massachusetts Institute of Technology  
May 2003

© Massachusetts Institute of Technology 2003. All rights reserved.

.....  
***Author***

Nadya A. Direkova  
Comparative Media Studies

.....  
***Certified by***

Henry Jenkins  
Director of Comparative Media Studies  
Ann Fetter Friedlaender Professor of Humanities,  
Professor of Literature and Comparative Media Studies  
Thesis Supervisor

.....  
***Accepted by***

William Uricchio  
Professor and Acting Director  
Comparative Media Studies

# **Bilingual By Design**

## **A Design Study of Toy Design and Material Play Culture for Children Bilingual in French and English**

Nadya A. Direkova

The following people have served as readers for this thesis:

.....  
***Reader***

Kurt Squire

Research Manager, Games To Teach Project  
Comparative Media Studies, MIT

.....  
***Reader***

Arundhati Banerjee

Center for Bilingual and Bicultural Studies Fellow  
Instructor and Lecturer at Foreign Languages and Literatures, MIT

# **Bilingual By Design**

## **A Design Study of Toy Design and Material Play Culture for Children Bilingual in French and English**

Nadya A. Direkova

**Submitted to the Comparative Media Studies Program  
in Partial Fulfillment of the Requirements for the Degree of  
Master of Science in Comparative Media Studies  
at the Massachusetts Institute of Technology, May 2003**

### **Abstract**

**Bilingual By Design examines the design of bilingual talking toys and their potential uses in the bilingual family. It argues that talking toys combining two languages give a child opportunities for bilingual identification that a world of monolingual toys does not. The study is informed by the theories of toys and children's culture developed by the play theorists Brian Sutton-Smith and Ellen Seiter.**

**The Bilingual By Design study involves two parts: the first consisting of toy studies observing the interaction of bilingual children with two talking bilingual toy prototypes created for the study, and the second consisting of interviews exploring the general material culture and media language preferences of bilingual children and families. The study uses a sample of bilingual French and English children at ages six to eight, their parents and their teachers.**

**According to the observations of the toy studies and interviews, bilingual children exhibited a strong tendency to use English, the majority language in the United States, as their primary language of social interaction. The bilingual development of these children was made possible by the dedicated and consistent efforts of parents and teachers to expose children to personal contact and media in both languages, and especially in French, which is the minority language in this situation. According to the toy testing observations, the social uses of the toy, rather than its solitary play aspects, have more potential to influence the linguistic development of bilingual children. The diverse cultural backgrounds, family practices of bilingualism, and language skills sets of the children, suggest that bilingual families require that toys for bilinguals have features to support language development at different stages, as well as a more sophisticated understanding of each culture that the family shares with their child.**

Thesis Supervisor: Henry Jenkins

Title: Director of Comparative Media Studies, Ann Fetter Friedlaender Professor of Humanities, Professor of Literature and Comparative Media Studies

For my father, Alexander M. Direkov

# Table of Contents

---

## Introduction

---

### **Chapter I. Bilingualism, Children's Language Acquisition and The Bilingual Family**

- 1.1 Defining bilingualism.
  - 1.2 The changing attitudes towards bilingualism: effects on bilingual children.
  - 1.3 A framework for understanding children's language acquisition and bilingualism.
  - 1.4 Understanding the role of motivation in the effectiveness of children's language acquisition.
  - 1.5 Media and technology as one of the aspects that create motivation for language development in majority and minority languages.
  - 1.6 Chapter conclusion.
- 

### **Chapter II. Bilingualism and Culture in the United States**

- 2.1 Bilingualism in the United States: the fragility of minority languages.
  - 2.2 The monolingual bias in the United States.
  - 2.3 Minority language media.
  - 2.4 The value of preserving heritage languages in the United States
  - 2.5 Franco-Americans in the United States.
  - 2.6 Media resources available to Franco-Americans in the areas of Boston and Cambridge, MA.
  - 2.7 The diversity of Francophone experiences in the United States.
  - 2.8 Focus test group: French-English bilingual children, ages six to eight, and their families.
  - 2.9 Chapter conclusion.
- 

### **Chapter III. Toys as Culture: a framework for understanding toys as identity signifiers and toys as children's media**

- 3.1 What difference do toys make for children? The play theory of Sutton-Smith.

- 3.2 The ambiguity of toys: a symbol of the family bond and a symbol of isolation.
  - 3.3 Toys as consolation and defense against loneliness.
  - 3.5 Toy as agency and identity.
  - 3.6 Toys as consumption.
  - 3.7 Understood separately: the different meanings toy consumption has for children and parents.
  - 3.8 A framework for understanding toys: a summary.
  - 3.9 Formulating a research question and hypothesis: a projection for understanding bilingual toys in the family.
  - 3.10 The toy isolation paradigm vs. the purpose of making talking cultural toys: If toys serve isolation, how can toys serve language and culture development?
  - 3.11 Chapter conclusion.
- 

#### **Chapter IV. Language and Play cross-sections: Literature Review of Relevant Projects**

- 4.1 La Clase Magica.
  - 4.2 Interaction design for bilingual children in La Clase Magica.
  - 4.3 La Clase Mgica and the toy theory of Sutton-Smith.
  - 4.4 Making Space for voice: language-oriented toys at the Media Lab, MIT.
  - 4.5 SAGE.
  - 4.6 Understanding SAGE in the framework of Sutton-Smith's toy theories.
  - 4.7 SAGE and Bilingual By Design.
  - 4.8 A humanities approach to children's media design.
- 

#### **Chapter V. Methodology**

- 5.1 Using design as a research method.
  - 5.2 Design stages.
  - 5.3 Research strategies.
  - 5.4 Methodological questions particular to the study of bilingualism.
- 

#### **Chapter VI. The Design Process: Technology, Physical Design, Interaction Design**

- 6.1 Design categories in the creation of a bilingual talking toy prototype.
- 6.2 Language combination choice in bilingual toy systems.

- 6.4 Prototype 1: Mary-Marie: the bilingual doll.
  - 6.5 Observations based on Bilingual Prototype 1.
  - 6.6 Prototype 2 and 3: The Red and The Yellow Lady Bugs.
  - 6.7 Voice interaction design and possible play roles in the bilingual family.
  - 6.8 Chapter conclusion.
- 

## **Chapter VII. Analysis of the Bilingual By Design Study**

- 7.1 The children, parents and teachers interviewed for Bilingual By Design.
  - 7.2 The curriculum goals of Ecole Bilingue.
  - 7.3 French Cultural Center language program.
  - 7.4 Analysis of the interviews and toy study findings:
    - The bilingual children tend to use American English as the main language for socializing and play.
    - The socializing and isolationist uses of bilingual toys.
    - The different ways in which parents and children understand the use of bilingual toys.
  - 7.5 Evaluating the expected uses for bilingual toys.
- 

## **Chapter VIII. Conclusion: Future Work In Bilingual Media**

- 8.1 Bilingual design: the challenge of accommodating multiple cultural and linguistic backgrounds.
  - 8.2 Bilingual design should situate the use of both languages within the cultural context that is interesting to the child, and that motivates the use of two languages.
  - 8.3 Bilingual design should support parent/ child and child/ child interaction as well as independent play.
  - 8.4 In conclusion.
- 

### *Appendix 1: Chapter VII. Field Notes and Observations*

- Toy studies and interviews at Ecole Bilingue
- Interviews with parents, toy testing at the French Cultural Center

### *Appendix 2: Relevant Commercial Products*

### *Appendix 3: Bibliography*

# Acknowledgements

---

This interdisciplinary project, involving technology, design, linguistics and education, touches on many of the hallmark research areas of the MIT community. I am grateful to all the faculty and students of MIT's Comparative Media Studies, Foreign Language and Literature Department, and the Gesture and Narrative Language Group at the Media Lab for providing me with their technical and research experience, guidance in structuring the theory of this argument, and support in the multiple challenges overcome at each step of the design, toy study and analysis.

Many thanks to the members of my thesis committee:

*Professor Henry Jenkins, Director of Comparative Media Studies*

*Kurt Squire, Research Manager, Games To Teach Project*

*Arundhati Banerjee, Center for Bilingual and Bicultural Studies Fellow, Instructor at Foreign Languages and Literatures, MIT*

Thanks for the gracious help with the design and research aspects of this project:

*Professor Justine Cassell, Gesture and Narrative Language Group, Media Lab, MIT*

*Professor Katherine Snow, Harvard University School of Education*

*Professor Mitch Resnik, Lifelong Kindergarten Group, Media Lab, MIT*

*Professor John Maeda, Aesthetics of Computation Group, Media Lab, MIT*

*Visiting Associate Professor, Odile Cazenave, Foreign Languages and Literatures, MIT*

*Professor Gilberte Furstenberg, Foreign Languages and Literatures, MIT*

Thank you, my family and friends:

*Alexander Direkov and Velina Direkova, my parents*

*Cynthia Barr, my most loyal editor and friend*

*Andreas Hofmann, AI Lab*

*Bruce Deffenbaugh, AI Lab*



### *Motivation for this research*

I started this project out of my curiosity in two fields: the field of toy design, which is an infinitely fun and challenging subject for an artist, and the field of bilingual studies, which has recently become a growing field of cross-cultural exploration, and educational and psychology research. The problem I wanted to explore crossed both fields: if toys represent an aspect of a child's identity, what kinds of toys will be suited to represent the linguistic and cultural aspects of a child's multilingual and multicultural identity? I started a design study of this subject with the hope to grow with it as a better designer, and with a desire to understand how material culture, and toys in particular, can come to accommodate and foster the bilingual child and her family.

### *Bilingualism and the United States Media*

The first two chapters of this study situate the project within the general framework of bilingual studies and media in the United States. The general premise of this argument is that even in a multilingual country such as the United States, where ten percent of the population considers itself bilingual (National Center for Educational Statistics, 2001,) the media largely ignores production in languages other than English, and presents a significant bias towards the representation of multilingual identities. The project

Bilingual By Design explores the design of bilingual toys as a case study of media design that could contribute to the sense of bilingual identity and language learning motivation of the bilingual child.

### *Toy as culture, toys as identity*

This study is informed by the theoretical framework of toys as culture created by children's media scholar Brian Sutton-Smith. In his study, (Sutton-Smith, 1986) explores the ambiguous aspects of the role of toys in the family: gift vs. obligation, confirmation of the loving family bond vs. isolation of the child, free-play fantasy vs. structured educational impact. Sutton-Smith's theory is used to create a projection of what the role of a bilingual toy might be in the families in the study. His understanding of toys as a part of consumer culture is enriched by the arguments of Ellen Seiter, (Seiter, 1993,) a children's scholar who examines in detail the role of the toys not only in the family home, but also in a more general media and social landscape.

### *Motivation for developing a tangible toy prototype*

I decided to work on a tangible toy because such toys are an important part of a child's life—thus they seemed like a natural choice for a prototype that can begin addressing the issues of bilingual identity at the stage of childhood. A conversation about toys allowed children to talk about something that they know and love, therefore inviting spontaneous feedback. To a researcher, the toy-testing and interviews provided the opportunity for

insight in the complicated knot of issues a toy represents: identity, social role, language learning.

### ***Design study as a methodology***

By definition, a design study presents a controlled intervention in a multi-factor environment (a given classroom, institution or social group). This is a relatively new, yet quickly growing, field of educational research and innovation, (Cobb et al., 2003). A design study as a method presents more than an exploration of the technical and design functions of a product: it aims to use the design intervention in order to test the validity of a theory, and to add nuance and improved understanding of the different factors that play a role in the situation discussed. Thus a design research study is more than a test of a prototype: it is a practical test of theoretical assumptions. The particular research techniques used in the study are discussed in the *Methodology* chapter.

### ***Focus test group: French-English bilingual children, ages six to eight, and their families***

The Bilingual By Design study focuses on a particular age and linguistic group: French-English bilingual children in pre-school age and first grade (six to eight year olds). I chose to work with this group because I myself am proficient in French, and French-English bilingual families are a significant group of the bilingual families in the Boston area, and in the United States in general. Children's media designers, such as (Druin et

al., 1999) recommended children from that age as a good choice for collaborative design experiments: kids of this age group are considered very creative, old enough to articulate their opinion, and still unburdened by some of the social expectations and notions of toys and play as a guilty pleasure that school environment tends to create in some cases.<sup>1</sup>

The members of my study, bilingual students, parents and teachers, were recruited at the Bilingual School of Cambridge, Ecole Bilingue, and the French Cultural Center in Boston. The studies were conducted in various locations over a period of two months. The interviews at Ecole Bilingue were conducted at the after-school program, where children finish their homework and enjoy playing with games and toys. As a common play environment for the children, this location allowed for a natural positioning of the toys. The studies at the French Cultural Center were conducted in the lobby and in one of the side visiting rooms of the Center: children and their parents often spend time playing in these locations while they wait for their classes or activities.

### ***The Design of the toy prototypes 1,2 and 3***

The Bilingual By Design interlaces the efforts of toy design with a research exploration of toy theory and bilingual theory. The electronic component and body of the toy prototype evolved over two semesters. First I designed the talking doll Mary-Marie, which told a short story in French and in English as the child changed her plastic dresses and pushed the color buttons on each dress. The first prototype had an overly large and

---

<sup>1</sup> The study aimed to recruit children of ages 6 to 8, yet most of the families that responded to the informational posters happened to have a child around 6 years of age.

clumsy electronic system, and an unreliable, difficult operational system. The design of a human-like toy involved some careful consideration regarding what the visual representation race. Since the bilingual children I was working with came from a variety of different countries and racial backgrounds, it was hard to find a common ground for an appropriate visual representation of a human-like toy. Furthermore, I realized that designing a doll may involve considerations of gender stereotypes, which were out of the focus range of my work.

The second toy prototype, the Red Lady Bug, is a more gender and race neutral toy. It has two wings with four color-coded buttons on each wing: the buttons on one wing produce short phrases in French, the other- in English. The sentences used referred to different emotional expressions: in each language, the lady bug could say that it is hungry, that it enjoys the day, or that it is very proud to be able to speak so many languages. To expand the interactive potential of this model, I designed my third toy prototype: The Yellow Lady Bug.<sup>2</sup> The Yellow Lady Bug has two sets of buttons on each wing: one can record a phrase, and the other button plays back this phrase. The toy allows parents and children to play the game of “teaching” the ladybug how to speak one language or another. The design details of each prototype are described and evaluated in the Chapter IV, *The Design Process*.

### ***Observation and analysis***

There are four major findings of the Bilingual By Design study suggested by the toy

---

<sup>2</sup> Lady bugs with yellow wings do exist in many parts of the world.

testing and interviews with parents, teachers and children at Ecole Bilingue and the French Cultural Center.

First, the children observed in the study tended to accept American English, the majority language of their society, as the main language of their play and social activities. This observation reflects the monolingualistic tendencies of language choice in the United States discussed by (Wei, 2002) and (Grosjean, 1986). Furthermore, it suggests that for bilingual children, who come from a variety of cultural backgrounds, their common knowledge of English and American culture becomes the largest basis of their shared experience.

Second, toys in the family can serve both isolating and socializing purposes, (Sutton-Smith, 1986). While both of these uses are possible in the long-term applications of the toy, the results of the Bilingual By Design study suggest that the toy prototype displayed the most potential influence to the child's language skills and practice of the minority languages when the toy was used in a social setting (such as a structured school environment, an interaction between two peers, or a play between an adult and a child).

Third, the toy studies suggest that parents see toys as a means of enriching the intellectual experience and language learning of the children, and children use toys as a means to develop their imagination and social belonging to a peer group. This confirms Seiter's argument (Seiter, 1993) that parents and children understand toys in different ways.

Fourth, the parents' reactions to the bilingual toy were influenced by their own views of bilingualism. Since each of the families had its own means of supporting bilingualism, they naturally expected different approaches to the interaction design of a bilingual toy. To accommodate the different skill levels of each child in French and English, and the different approaches of parents towards the promotion of bilingualism, *Bilingual By Design* suggests that media design for bilinguals should include both toys that promote basic language skills, as well as toys that promote a more sophisticated set of cultural meanings associated with each language.

While the observations of the toy studies cannot provide any statistical data, they did provide insight into the design of my prototype, and suggestions for the future development of bilingual designs for children. I found that the study that I had created, because of its limited time engagement, could not reveal to me how children will interact with the ladybug over the long term. While the initial responses to the toy were favorable, my study has no means of addressing the long-term applications of the toy, which are in some ways the real measure of its impact on a child's self-confidence and sense of bilingual identity. While the technical design of the two prototypes used in *Bilingual By Design* was relatively simple and allowed limited voice interaction, the author is hopeful that future studies will be able to use advanced voice technologies and artificial intelligence to create social and educational experiences enabled by toys.

### ***Chapter structure:***

This document is organized in eight chapters. The *Introduction* summarizes the essential argument and structure of the paper. The first two Chapters, *Bilingualism, Children's Language Acquisition and the Bilingual Family* and *Bilingualism and Culture in the United States*, examine the notions of bilingualism that will be explored in the study. The Chapter *Toys as Culture* summarizes the (Sutton-Smith, 1986) and (Seiter, 2002) theories of toys as children's media as a paradigm that will be used in the proceedings and evaluation of the study. *Language and Play cross-sections* summarizes two research projects exploring children's toys and issues of literacy: La Clase Magica and Sage, (Cassell, 2002). The *Methodology* Chapter explains the essence of design research, and it describes the particular strategies that have been applied in this study. The *Analysis* Chapter summarizes the interviews and toy studies conducted at Ecole Bilingue and the French Cultural Center in Boston, and explores the major conclusions and supporting evidence of the study. Finally, the *Conclusion* Chapter offers insight into the important design elements that should be considered for the future development of products for bilingual families. The *Appendix* Chapters presents detailed accounts of the interviews, toy studies, toy technology and sketches, etc.



# **Bilingualism, Children’s Language Acquisition, and the Bilingual Family**

## *Chapter 1*

---

The project Bilingual By Design explores the design of bilingual toys that contribute to the sense of bilingual identity and language learning motivation of the bilingual child. In order to understand how toys as children’s media can influence positive attitudes towards bilingualism, this chapter will define bilingualism as a phenomenon, and explore the main issues relevant to the language acquisition of bilingual children.

### ***Defining bilingualism***

Today, there are fewer than two hundred countries in the world, and more than 6,000 languages spoken; more than half of the world’s population is bilingual. According to recent definitions, bilingualism involves the “alternate use of two or more languages by the same individual” (Mackey, Wei, 2000, page 27). In this study, the term “bilingual” will be used to describe individuals who use both languages on a regular basis, regardless of whether they are equally proficient in both (Grosjean, 1982). Similarly, the terms “bilingual” and “multilingual” will sometimes be used interchangeably in order to acknowledge that some of the people involved in this group speak more than two languages.

According to (Mackey, Wei, 2000, page 27) bilingualism can be described as a behavioral pattern characterized by a series of interdependent factors:

- **Degree**, or the extent to which a person has command over various aspects of each language. It is a common misconception to believe that bilingual people are fluent in both languages. In reality, many bilinguals have varying competencies in each language; many bilinguals have a dominant and a weaker language, and in certain cases they have knowledge of a given subject in one language, but not in the other.
- **Function**, or the context in which a person acquires and practices bilingualism. A bilingual person's ability and attitude toward a language will be different if he or she learned both languages at home or at school, if she or he lives in a country that uses these languages, or if he or she has access to media in these languages.
- **Alteration**, or the effect of the co-existence of the two language structures upon each other.
- **Interference**, or the use of features that belong to one language in the speaking or writing of the other language. The interference between languages can occur along the lines of cultural information, semantic meaning, grammar structures or phonology. For example, a French-English bilingual who says *sur le comité, dans quinze jours, and sous étude*, is likely to be modeling these prepositions on the English phrases *on the committee, in fifteen days, and under study*. (Mackey, Wei, 2000, page 27)

Bilingual By Design is particularly interested in the *Functional* characteristics of childhood bilingualism. As a study of toys and material culture in bilingual families, it focuses on the effects of media on the language acquisition and identity of the bilingual children involved. Linguistic factors such as the degree, alteration or interference of the languages will not be studied in detail.

***The changing attitudes toward bilingualism: effects on bilingual children***

This section does not present an extensive account of the debates around bilingualism, which have implications in disciplines as diverse as linguistics, psychology, sociology, history, cognitive science, and economics. Rather, it aims to show that the attitudes toward bilingualism have been changing considerably through the last century in ways that affect children's motivation to remain bilingual.

The recurrent bias against bilingualism can be traced in the Western intellectual tradition from the early nineteenth century until about the 1960s, (Wei, 2000.) To give an illustration, we will use a quote from a professor at Cambridge University at the turn of the last century (Laurie, 1890):

*“If it were possible for a child or boy to live in two languages at once equally well, so much the worse for him. His intellectual and spiritual growth*

*would not thereby be doubled, but halved. Unity of mind and character would have great difficulty in asserting itself in such circumstances.”*

(Laurie, 1890, page 18)

Such a bias has been especially strong in the beginning of the twentieth century in the US, when the debate of bilingual education vs. English-only education arose with each new wave of immigrants. Studies have continually claimed that bilingual students underperform on standardized exams compared to monolingual students, and some of the “research” has gone so far as to claim that bilingualism causes personality disorders such as schizophrenia, (Wei, 2000), (Sommer, 2002). The research methodology and assumptions of many of these studies have been disqualified by current research of monolingual biases (Wei, 2000), and at the same time, new research has been conducted that shows the benefits of bilingualism. For example, a study conducted on French-English speaking children in Montreal (Peal and Lambert, 1962, qtd. in Palij and Homel, 1987) which was originally set to examine the means of improving the retardation presumed in bilingual children, actually found that on all measures of verbal intelligence bilingual children performed better than monolingual children. According to Peal and Lambert, the bilingual child’s experiences with two cultures have given him “a mental flexibility, a superiority in concept formation, and a more diversified set of mental abilities, in the sense that the patterns of abilities developed by bilinguals were more heterogeneous,” (Peal and Lambert, 1962, qtd. in Palij and Homel, 1987.) As one of the first studies perceiving bilingualism in a favorable light, this study was succeeded by decades of research exploring this direction. Later studies have attempted to understand

the bias that might have influenced previous findings and to incorporate the research results into supportive educational programs for bilinguals.

Although bilingualism in itself is no longer considered “dangerous for the child’s soul,” it can nevertheless have certain negative aspects (Harding and Riley, 1986):

- *Educational challenges:* Teaching a child to communicate in two languages often requires double the time and resources of the education of a monolingual child. In the cases of underprivileged children, this often translates into inadequate educational environments and sub-standard performance on standardized tests.
- *Social bias and xenophobia:* Language serves to define a community, as well as to exclude the “outsiders” from this circle. The use of a language other than the majority language can create negative attitudes and varying degrees of isolation.
- *Culture shock and frustration:* Unable to fully understand and participate in a particular culture because of language difficulties, a child may feel isolated and confused.

However, bilingualism has a number of communicative and cultural advantages, particularly for children, (Wei, 2000):

- *Relationships with parents:* In the case of families formed of people with two different linguistic backgrounds, the child can benefit from exposure to both systems and use this to build subtler, more layered relationships with each parent.

- *Extended family relationships:* In the case of immigrant families, the study of a second language often allows the child to participate in the family culture of his grandparents and extended family.
- *Community relations:* Bilinguals have a wider choice of communication partners and situations than monolinguals.
- *Cultural sophistication and sensitivity:* The ability to speak multiple languages and relate to multiple cultures offers numerous advantages in the world of globalization.

Bilingual By Design operates with the assumption that bilingualism is responsible for beneficial developments in a child's life. As the *Methodology* Chapter explains, the particular group of Franco-American bilinguals that is the focus of this case study belongs to an upper-class, privileged group community that might not experience the bias and hardship of other bilingual groups in the United States.

### ***A framework for understanding children's language acquisition and bilingualism***

The development of language acquisition in bilinguals is the subject of intense debate and continued research. Since the focus of this project does not require an in-depth study of linguistics, this section will highlight the major points that are generally accepted in the field of language acquisition, according to (Harding and Riley, 1986.)<sup>3</sup>

---

<sup>3</sup> The summary of points related to language learning is presented according to Harding, Riley, *The Bilingual Family: a handbook for parents*, Cambridge University Press, 1986

According to (Harding and Riley, 1986) language is used by children for five general purposes: *building up relationships, exchanging information, thinking, playing with words, and communicating while learning*. Thus, language is a ubiquitous system of personal and social meanings that develops as the child is exposed to new influences and situations. Language acquisition can be defined by a number of parameters (Harding and Riley, 1986, page 20):

- “*Learning is an increase of the range of meanings which are available to an individual,*” (Harding and Riley, 1986.) The similarities and differences between ideas and their expression develops through a series of interactions between the child and her environment.
- “*Learning is the product of ‘motivation x opportunity.’,*” (Harding and Riley, 1986.) Young children develop their language skills by listening and participating in the social environment around them. Their abilities depend on the interaction opportunities they are given.
- “*Language is a social phenomenon and language learning is therefore a social activity,*” (Harding and Riley, 1986.) Many aspects of language can only be learned in direct interaction with other individuals. The role of a language community in a child’s development can only be aided, but never replaced, by technology and mass media.<sup>4</sup>

---

<sup>4</sup> All of these points are summarized in Harding and Riley, *The Bilingual Family*, Cambridge University Press, 1986, page 20.

The goal of Bilingual By Design, creating toys for bilingual children, aims to promote a number of the factors beneficial to language learning: it aims to increase the motivation and opportunities for practicing both languages by engaging the child in a friendly social play activity. As Chapter III, *Toys as Culture* will describe, bilingual talking toys could become a tool for the expression of bilingual identity, expanding the range of meanings and linguistic identity possibilities available to a child. The role of a single toy, and a toy prototype, in the child's linguistic and cultural development will always be a limited one. However, talking toys as material embodiment of language and culture serve present an interesting cross-road and a unique focus point in the understanding of bilingualism.

***Understanding the role of motivation in the effectiveness of children's language acquisition***

According to a number of the parents and teacher interviewed for this project, bilingual toys can serve as fun and friendly agents that motivate the child to engage with the language he or she is not familiar with. This can be a significant observation in the role of bilingual toys. Therefore, it is important to examine the role of motivation in language acquisition.

Bilingualism scholar Francois Grosjean believes that “what is essential in the maintenance of the ‘weaker’ (often the minority) language and hence in the development of bilingualism is that the child feels the *need* to use two languages in everyday life,”



(Grosjean, 1982.) Furthermore, “situational motivation.... appears to be by far the strongest influence on the speed and apparent ease of learning,” (Grosjean, 1982.) Children learn language (and most other disciplines) when they have some internal motive to do so. For example, English children studying in Welsh schools make slower progress in Welsh when their reasons for studying it seem to be driven by the existence of a class requirement. On the other hand, Welch children make rapid progress in English, since English is the language of most media, further education and job opportunities outside their small Welch community.<sup>5</sup>

***Media and technology as one of the aspects that create motivation for language development in majority and minority languages***

Most of the media that surrounds children relies on language as one of its primary means of communication: television, radio, films, books, games and toys are all means by which language infuses the child’s world. Although none of these media can substitute the value of interaction with real individuals, media is one of the ways in which children are invited to practice their language skills. Bilingual By Design is particularly interested in the role of toys in language acquisition-- a narrow, but compelling aspect of the intersection between the fields of media studies and language studies.

---

<sup>5</sup> This example also speaks to the need of additional attention and support of the government for minority languages in each country. The Welch administrators in the UK seem to be doing an incredible job in promoting bilingualism. Recently, there have been contests for Bilingual Design of web and other media organized by the Welch community.

The particular ways in which toys play a role in children's lives will be explored in Chapter III: Toys as Culture. At this stage, it is important only to note that play theorists such as Brian Sutton-Smith speak of toys as important agents in the development and negotiation of family dynamics, personal identity and social identity. Toys serve as tools of expression for the child's imagination: their shape and function is adopted in the fantasy world of the child and serves as a building block for imaginative play.

The description of language acquisition outlined above allows for a number of different ways in which toys can contribute to the language and culture learning of bilingual children, which are incorporated in a projected understanding of the possible role of bilingual toys in the bilingual family, Chapter III, *Toys as Culture*.

### ***Chapter conclusion***

This chapter has outlined the theories of bilingualism that are most relevant to the design of effective bilingual media. Bilingualism, or "the alternate use of two or more languages by the same individual" (Mackey, Wei, 2000), is a phenomenon formed at the intersection of two monolingual cultures. The bilingual community itself is an open structure formed at this intersection, whose members are motivated to remain bilingual. As we will see in the following chapter, *Bilingualism and Culture in the USA*, without personal motivation, as well as family and government support, most bilingual communities in the United States tend to lose their original language and use English as their main language within three generations. If heritage languages are to be preserved in

the United States and elsewhere, it is important to reinforce the personal motivation of individuals in bilingual groups to preserve their native language.

# Bilingualism and Culture in the United States

## Chapter 2

---

*“The bi and multilingual options are unfamiliar and fresh: they admit that most people in the world live in more than one language and they develop a tolerance (even a taste) for the risky business of democratic life where codes coexist and come into conflict.”*

Doris Sommer, *Bilingual Games*,<sup>6</sup> (Sommer, 2002)

### **Bilingualism in the United States: the fragility of minority languages**

With more than 175 languages actively used in its territory (Brecht and Ingold, 2002) the United States is one of the nations that have the highest language diversity. In 1992, approximately 10 percent of adults in the United States considered themselves bilingual in English and another language, (National Center for Educational Statistics, 2001.) Yet, ironically, this language diversity remains understudied and undermined by the lack of programs that support the development of minority languages.<sup>7</sup> Without active intervention or an influx of new immigrants, minority languages are lost over time: their use typically subsides within three generations (Wiley, 1996, qtd. in Brecht and Ingold, 2002). Immigrant families are observed to switch to English use in an established pattern: children arriving in the United States as immigrants are usually English-dominant

---

<sup>6</sup> A quote from the manuscript of Sommer, Doris, *Bilingual Games*, Harvard University. As of January 2003 this manuscript was accepted by a publisher, but still unpublished, and provided to the author by the generous cooperation of Professor Sommer and her assistant.

<sup>7</sup> According to Grosjean, unlike countries like Belgium and Canada, which maintain precise statistics of their bilingual population, the United States, perhaps the one nation in history which has the highest influx of bilinguals, does not maintain many surveys related to this subject.

speakers by the time they become adults; children born in the United States to first generation immigrants are quick to move to English-dominance by the time they enter the school system; and most third generation children have lost much of their knowledge and contact with their heritage language, (Center for Research on Education, Diversity & Excellence, 2003.)

***The monolingual bias in the United States:***

Despite the pervasive multilingualism in the United States, bi- and multilingual Americans continue to be marginalized and discriminated against. Bilinguals remain “unimaginable in the country dominated by the one language-one nation ideology which gave birth to the “English Only” movement and rendered the subject of bilingual education to the nexus of bitter controversy,” (Crawford, 1992, qtd. in Pavlenko, 2001, page 330.) For example, to many monolinguals, the presence of an accent or the use of a language other than English may still create doubts with regard to one’s competence in English. According to (Pavlenko, 2001) mainstream linguistic theorists have been accused of promoting monolingual and ethnocentric biases, which distort the fact that more than half of the world’s population is bi- and multilingual, and that monolingual—and not bilingual—factors are really what has been described in their theories, (Pavlenko, 2001.)

Bilingualism in the United States is tolerated, yet often treated as a “necessary evil,” a transitional stage that all new-comers to the state have to live through before they are

truly proficient in their use of English (Grosjean,1982). Bilinguals often represent a way of thinking that is foreign, difficult to understand and adapt to. Speaking a language other than English is often associated with belonging to an underprivileged social group, which, combined with factors such as race, has lead to hostility or discrimination (Grosjean, 1982). The legislature and educational system in the United States have used laws (such as the 1974 Bilingual Education Act, qtd. in Homel and Palij, 1987, which expired recently) that protect the rights of bilingual children to study their native language, but only to the extent that this person needs native language lessons for his or her “acclimatization” to English-speaking.

### ***Minority language media***

At the same time, the United States remains a country that is fairly tolerant to the practices of its bilingual population. The United States might not have the extensive legal and educational support of bilingualism that Canada provides,<sup>8</sup> but it has rarely been prohibitive towards the practice of bilingualism. For the most part, the citizens of the United States have been free to use their mother tongue in their every day life. They have preserved their rights to assemble, form cultural centers, practice their individual religions, and create media in their native language. According to (Grosjean, 1982), linguistic minorities have been active in pursuing their right to create and maintain media in their native language. For example, in 1980 there were 2,500 radio and television stations which broadcast in languages other than English in the United States. (*The Ayer*

---

<sup>8</sup> Canada is officially a bilingual country, and through out its history its has prioritized the preservation of this bilingualism, and the support other minority languages. (Homel, Peter and Palij, Michael, 1987)

*Directory of Publications*, 1979, qtd. in Grosjean, 1982), speaks to the existence of thirty dailies published in minority languages such as German, Chinese, Spanish, etc.

According to (Kloss, 1977, qtd. in Grosjean, 1982) there are about 13,000 movie theaters which show movies in minority languages. Community-serving non-English language media does exist in the United States, despite the overbearing presence of mainstream monolingual networks.

***The value of preserving heritage languages in the United States and the promotion of bilingualism as the way to preserving heritage languages***

There is no legal basis that establishes English as the formal language in the United States, (Homel and Palij, 1987,) yet English language is the official language of media, business, government, education, and everyday life. In the presence of such hegemony, why is it beneficial for the United States to promote its bilingual societies?

In spite of its isolationism, the United States economy and cultures depend on their interactions with other nations: an interaction which is always more beneficial if it involves people who speak the native language of the other party involved. According to (Grosjean, 1987, pages 66-67) “the incompetence of Americans in foreign languages is nothing short of scandalous and is becoming worse... this gross national inadequacy has become a serious and growing liability.” While globalization and United States economic power have made English the international language of our time, there is also a significant backlash from countries whose languages have been “endangered” by the

pervasiveness of English (such as France, for example). Adopting a policy approach that is more friendly to linguistic diversity might be of significant geopolitical advantage to the United States: it will preserve the cultural diversity of the country, and it can serve as an act of good will which decreases the isolationism of the United States as a global hegemony.

In such a context, the creation of bilingual toys is not motivated by an argument against the use of English as a main language in the United States. The preservation of multilingualism in the United States does not require bashing the importance of English language, but a promotion of languages other than English and an increase in the visibility and importance of bilingual (and multilingual) societies. The promotion of bilingual identity, bilingual education, laws to protect bilingualism and visibility of bilingualism in the media will all be different means of contributing to this goal, and the creation of bilingual toys, the focus of this work, is a case study of this effort to increase the social visibility and support of bilingualism.

### ***Franco-Americans in the USA***

*“Most young Franco-Americans no longer speak French (we have no parochial schools left, and parents rarely speak French in home to their children, a phenomenon which has gradually come about since the Great Depression of the 1930s and the World War II)... I think that my generation, that is, Franco-Americans born between the end of World War*



*II and up to about 1955 are the last generation of la vieille ecole type of Franco-Americans. We were the last to be brought up in French and English at home, to receive truly bilingual education at school. Of this last generation, very few still speak French today, and their children are often growing up with no ethnic identity whatsoever.”*

Bilinguals Speak, Francois Grosjean, *Life with Two Languages*, 1982

The group of interest to this study consists of the Franco-American bilingual families in the US.<sup>9</sup> In the Survey of Income and Education (1976), 1.9 million Americans reported a French language background, making this linguistic group one of the largest linguistic minorities after Hispanic, Chinese, Italian and German Americans. About 43 percent of the members of this group reported using French in their daily life (3 percent used French as monolingual speakers, and 40 percent used French and English as bilingual speakers), (Grosjean, 1982.) The largest numbers of Franco-Americans live in Louisiana and the Northeast: in particular, an estimated 800,000 report French language background in New England, (Grosjean, 1982.) According to the same source, there is a tendency towards assimilation and the decline of bilingualism among this group, which is nevertheless counteracted by the influx of new French-speaking immigrants in each generation.

---

<sup>9</sup> Most of the participants in this group are members of the Franco-American group in the United States. This, however, is not the only French-speaking group in the United States—French-speaking families can be found in groups coming from countries other than France and Canada.

*Media resources available to Franco- Americans in the areas of Boston and  
Cambridge, MA*

As major college sites and liberal intellectual areas, Boston and Cambridge provide rich educational and cultural opportunities for French-English bilingual families. Ecole Bilingue, a French-English bilingual school, enrolls students from kindergarten age to high school. The French Cultural Center hosts language classes, seminars, French film series, and celebrates French holidays with numerous socials and parties. Each season, the Boston movie theaters are open to projection of French movies with subtitles, and a French Film Festival, hosted by the Museum of Fine Arts in Boston, presents more than twenty new French films every summer.

*The diversity of Francophone experiences in the United States*

Colloquial discussions of language use often equate the Francophone experience with the experience of belonging to the French nation. In reality, Francophones around the world and in the United States do not always have French origins. In the United States, Francophone societies form from immigrating populations of France, as well as Canada, the Caribbean, French-speaking Africa or other parts of French-speaking Europe, such as Belgium and Switzerland. The historical and social circumstances of each of these populations are different, and so are their dialects, cultures, beliefs, folklores and the stories they pass on to their children. Bilingual families become further individualized by their particular combination of a French-speaking background with a background in other

languages, such as in the case of a French-speaker who marries an Italian-speaker and lives in the United States. The people interviewed in the current study reflect this diversity of Francophone experiences. In the scope of its' study, Bilingual By Design is considering participants from the Bilingual School in Cambridge, which educates children from more than thirty different nationalities. The interviewed families themselves are coming from the United States, France, the Magreb, Israel, and in some cases they speak two or three languages in home. All of these families can be described as French-English speaking families; they share both languages, but they do not always use this language to communicate the same cultural background.

The French-speaking experience in the Unites States itself is informed by numerous voices and cultural tendencies. What kind of language and culture in the media would support and reflect their multiple belongings and interests? How can various media forms give more visibility to the existence and needs of such bilingual groups? The segmentation and diversity of bilingual communities in general appears to be one of the main reasons why mainstream design does not address their needs with more attention: each of these groups is so individual in its interest and social status, that it is hard for commercial designers to target bilingual and multi-lingual families as a group. Rather than focus on the diverse cultural backgrounds of French-English speaking bilinguals, the Bilingual By Design study explores a feature that they have in common: the alternating use of French and English in their daily lives. Without neglecting the ever-present connection of language and culture, Bilingual By Design explores how bilingual talking toys can serve the bilingual family as artifacts.

*Focus test group: French-English bilingual children, ages six to eight, and their families*

The study of Bilingual By Design is focused on families from a particular subset of Franco-Americans in the United States: French-English bilingual children in pre-school age and first grade (six to eight year olds), coming from families living in Boston and Cambridge. The French-English bilingual families are one of the largest of the bilingual populations in the Boston area, and one of the ten largest bilingual groups in the United States in general, thus they were a convenient subject for a toy study.

I selected the members of the study, bilingual students, parents and teachers, from the Bilingual School of Cambridge, Ecole Bilingue, and the French Culture Center in Boston, which hold Saturday classes for bilingual French students. While the mission of each institution is different (the Bilingual School educated children in English and in French, and the French Culture Center focused on developing advanced French skills only), the members of each group share certain common characteristics. Most of the families that I was able to contact were recent immigrants to the United States, or spoke French because one of the parents had emigrated from France. The students and families I interviewed shared a certain privileged class position. It is generally considered that bilingual students and education in general is more successful in cases where the children come from upper class families with plentiful access to educational materials and professional instruction. Such is the case with most of the students interviewed: they all come from families who

had the opportunity to dedicate resources to private schooling or lessons. With these facts in mind, my study has a particular bias: it deals predominantly with bilinguals who already have the best conditions to grow, who receive plentiful attention, toys, etc. While regretting the limited scope of the focus group, the author hopes that future studies will shed more light on the different implications of material culture and toys for bilingual children of different socio-economic backgrounds.

### ***Chapter conclusion***

Looking at the general pattern of bilingualism in the United States, we discover that, while bilingual groups form about ten percent of the population, many of their languages, and their identities, are “invisible” in the scope of monolingual, English-dominant media in the United States. Unlike other countries, such as Canada, which protect bilingualism by imposing two language requirements for the media of its bilingual areas, the United States has few laws and restrictions created to protect the diversity of its languages. As we will see in the following Chapter, *Toys as Culture: a framework for understanding toys as identity signifiers and as children’s media*, toys are an important media construction which can reflect and shape the identity of children and adults. Can toys be used as a way to reflect and promote the representation of bilingual culture in the United States? Such an identity deserves more prominence on the United States media landscape. The further design study and interviews will explore the particular ways in which a bilingual design could find a role in the studied American families.

# **Toys as Culture: a Framework for Understanding Toys as Identity Signifiers and Toys as Children's Media**

*Chapter 3*

---

*“Toys, apparently the most minimal of our concerns, turn out to be intimately related to many larger cultural patterns in the family, technology, schools, and the marketplace. Toys echo these other patterns, and yet, as vehicles of intelligence and of play, they also have their impact in myriad of ways, all of which are much more deserving of our social scientific concern than has hitherto been the case.”*

Brain Sutton-Smith, *Toys as Culture*, (Sutton-Smith, 1986)

This chapter will examine the role of toys in children's lives as it is presented by the play theorist Brian Sutton Smith. The goal of this review is to provide a framework for understanding the possible roles that a toy for bilingual children can play in the family. Additional interpretations of toys as consumer culture will be provided by the case studies of toys for the children's market examined by Ellen Seiter (Seiter, 1993) in her book *Sold Separately: Children and Parents in Consumer Culture*. Based on this framework, this chapter concludes with a projection of what the role of bilingual toy prototypes could be in bilingual families.

***What difference do toys make for children?***

***The theory of toys by Sutton-Smith:***

*“Children... can speak to the issues of bonding by close affection for the toy; of autonomy by control over the toy; of heteronomy by following its schemes and suggestions; of education by discovering how it works; of entertainment by enjoying its marvels; of consumer pleasure by knowing it has public image or status and of novelty by discovering the unrevealed novelties it contains.”*

Brain Sutton-Smith, *Toys as Culture*, (Sutton-Smith, 1986)

In his life-long dedication to the research of meaning in toys and play, Brian Sutton-Smith examines the question: what difference do toys make for children? Out of his numerous books dedicated to toy culture *How to Play with your children (and when not to)*, *The Ambiguity of Play*, *Play and Learning* and *Toys as Culture*, the last one is the most relevant to the framework of this study. *Toys as Culture*, (Sutton-Smith, 1986) presents an exploration of the multiple roles of the toy in the family: a symbol of family bond and isolation, consolation for the lonely child, a tool for the child’s imaginative play and identity formation. The following paragraphs do not explore all of the detailed points he makes in his study, but outline the major theories that are most relevant to the Bilingual By Design study.

***The ambiguity of toys: a symbol of the family bond and a symbol of isolation***

According to Sutton-Smith, toys have a dual usage: they symbolize a gift and an obligation, a bond and solitary time, isolation and co-operation, (Sutton-Smith, 1986,

page 43.) Within the modern American family, more than sixty percent of toys are given as Christmas gifts, though recently the toy industry has also advertised toys as “gifts for any season,” thus promoting even larger sales for toys (Sieter, 1993). According to Sutton-Smith, toys are a gift that maintains the social bond between adults and children. At the same time, toys are given so that the child can occupy himself without any demands on the parent’s time; toys serve as tools for the isolation of the child and as a means of getting the child accustomed to the solitary work activities he or she is about to face as a student and an adult.<sup>10</sup> He supports this theory by providing the results of a study that claims that the majority of the toys children play with can be described as toys with solitary uses, rather than social and mixed uses. According to Sutton-Smith, “... the toy is a model of the kind of isolation that is essential to progress in the modern world.” Furthermore, “With the toy, we habituate the children to solitary, impersonal activity; and this is the forecast of their years to come as solitary professionals and experts,” (Sutton-Smith, 1986, pages 24-25). Sutton-Smith suggests that isolation through toy gifts is one of the guilty pleasures of parenthood: parents are often reluctant to acknowledge their relief at having their child peacefully isolated in solitary play with a toy or a game. Such is the ambiguity of toys in the family structure: they represent the family bond at the same time as they represent the imposed isolation of the children from their parents.

---

<sup>10</sup> Sutton-Smith acknowledges that there are toys that require the cooperation of other children, but he argues that this is not the primary role of toys.



### *Toys as consolation and defense against loneliness*

“Which toys are the best substitute friends?” asks Sutton-Smith after he presents his arguments for the isolating effects of toys. According to him, “the toys of loneliness” are those that carry the strongest resemblance to a human characteristic, such as soft toys, records with human voices telling stories or singing, or toys, such as video games, which provide some reaction to the player (Sutton-Smith, 1986, page 46.) In the structure of the family, some of the most beloved toys, such as soft bodied toys and blankets, comfort the child in the lack of presence of an adult or a child playmate. Such toys, he claims, are “transitional” objects that help the child live through separation from their parents, or a change of unfamiliar scene. Huggable, unthreatening, and familiar, these toys remain a vital part of the belongings of many an adult, and they allow the now grown-up person to “transition” himself back to childhood.

### *The toy as agency and identity*

Soft toys can be so appealing partly because they are objects to be manipulated by the child: they are one of the few human-like beings that are actually smaller than the child. According to Sutton-Smith, toys can provide children with a sense of agency: toys are the subjects the child’s will. As such, they do not determine the play of the child, but serve as tools that are transformed according to the imaginative purpose that the child finds for them. As the author points out, young children (two or three years old) are more likely to play with the toy in the manner suggested by the character of the toy: they need the

realism of the toy to help them form their own narratives (Sutton-Smith, 1986.) As children grow older, they are more ready to make the toy function as subject of their own play narrative. This chapter suggests that the toy is a tool for children to practice their own agency, and a way in which the child incorporates ready-made models in new, original though patterns.

Another property of toys is their ability to become “identifications” central to the children’s lives, and at times, central to their destiny. Sutton-Smith cites a number of interview examples in which adults reminisce about a toy that they fell in love with, and the way this experience shaped their choice of career, or values, etc. While acknowledging the power of toys to have such symbolic and transformative meanings, Sutton Smith nevertheless notes that these transformative experiences are spontaneous and private. The toy became an important symbol in the life of an adult based on the individual’s system of convictions, material possessions, family expectations, etc. Each of these transformative situations is so particular to an individual that it is not possible to pin down the qualities of the material toy that have provoked it.

Placed in a general social context, toys are a cultural indicator worth examining: they represent one of the ways in which cultures over-determine the important social lessons they want to transmit. According to (Sutton-Smith, 1986, page 43,) “anything that is important in a culture is over-determined. That is, it is taught in many different ways and with much redundancy to make sure that the targets of the teaching get the message.” He gives the example of pervasive gender-stereotyping in children’s toys: Barbie dolls and

robots are just a few of the toys that promote powerful stories of what each of the sexes is expected to be and act like in society. According to Sutton-Smith, toys in themselves are not responsible for the creation of these stereotypes, yet they are one of the most stable ways in which the culture transmits and embeds these stories and social roles in our imagination.

### ***Toys as consumption***

A study of toys that does not consider the role of toys as a part of consumerist culture will be incomplete. Described in economic terms, the toy industry itself is a massive enterprise, represented by some 800 companies that sell about 150,000 different kinds of toy products, with 4,000 new items every year. This industry processes about 250,000 tons of plastics, 200,000 tons of metal and employs more than half a million people, (Sutton-Smith, 1986, page 2). Even the most severe toy critics, who claim that the presence or absence of toys does not make any difference in the child's development, agree that the industry itself has a phenomenal expanse and influence on children's culture, (Sutton-Smith, 1986, page 84). According to Sutton-Smith, the toy industry continually promotes the use of toys by presenting toys as novelty and a source of information valuable to the children. As we will examine in the *Methodology Chapter*, the context the Bilingual By Design study is academic, and not commercial, and thus any exploration of the marketing and consumer aspects of the toy prototype are beyond the scope of the study.

*Understood separately: the different meanings toy consumption has for children and parents*

One of the interesting aspects of toys is their ability to signify different ideas for parents and for children. While this notion is implicit in the discussion in *Toys As Culture* (Sutton-Smith, 1982), it is developed in detail as the main argument of *Sold Separately: Children and Parents in Consumer Culture* by Ellen Seiter, (Seiter, 1993.) According to Sutton-Smith, parents and children often have different goals in their use of toys. The parents use toys as a way to teach the child about the values of modern society, such as solitary work, gender models, individualism; they use the toys as one way to prepare their children for adult roles. For children, toys become the building blocks of their fantasy play and an imaginary world where the child is in control, rather than controlled by external expectations.

(Seiter, 1993) elaborates on these differences by showing that children often use toys in ways that are not immediately obvious to adults. Children's desire to have toys is often motivated by a need to belong in a peer group, to rebel against their parents' expectations, to participate in the imaginary world of their favorite movie characters, or to mimic the styles and stories presented on television. According to (Seiter, 1993, page 14), "... it is a mistake to judge children's desires for toys and television programs exclusively in terms of greed and individual hedonism... In wanting to have toys and see television programs, children are also expressing a desire for a shared culture with their schoolmates and friends and a strong imagination of community." For example, when

two children discuss their favorite toys—Turtle Ninja, Barbie or Lego, they draw on their knowledge of mass culture as a shared repository of images and stories and a common culture which helps them relate to each other.

According to (Seiter,1993) toys are even marketed differently to parents and to children. The advertising messages oriented towards children are mostly aired on television. For the most part, such commercials feature a dynamic group of children. Instead of peaceful scholarly play, their activities are noisy and hilarious, and often imply a plot of outsmarting parents or teachers. In general, advertising directed towards children is a world where “kids rule,” (Seiter, 1993, page 115.)

In the world of parents, toys bring a different set of tensions and goals. Parents have to negotiate their family budget, class status, educational goals and aspirations for their children with the pressures of the market and children’s desires. The advertising oriented towards parents tend to be mostly print campaigns; they include images of the ideal middle-class family or solitary children playing with toys, and verbally and visually invite the parents to buy toys in order to make their children “smile” or become “better educated.” Indeed, pleasure and education are the two major reasons that advertising promotes in order to motivate parent’s interest in the toy purchase. The social aspirations and educational background of the parents are also implicit in the purchase of the toy. According to (Seiter, 1993, page 193), “many parents believe that what is given to children in terms of material culture is an important communication about the future.”

This argument is also supported by Sutton-Smith, who believes that toys tend to prepare children for their future roles in the world of adults.

### ***A framework for understanding toys: a summary***

In a brief summary of the toy theory framework developed by Sutton-Smith and Seiter, we can conclude that toys serve families in a number of ways:

- n Toys are often used as one of the most stable ways in which a culture over-determines the roles and stereotypes it considers essential.
- n Toys as a gift can reinforce the bond between parents and children, while also isolating the child to a sphere of lonely play activities.
- n Toys provide the child with a sense of agency and contribute to one's formation of identity.
- n Toys can provide educational activities for the child.
- n The choice and use of toys can have different meanings for parents and children.

### ***Formulating a research question and hypothesis: a projection for understanding bilingual toys in the family***

For the purposes of this study, the toy theories presented above create a particular lens through which Bilingual By Design will examine the potential role of its toy prototypes.

The study of bilingualism in the United States and the study of toy theory allow us to determine the general research question of this study: Can bilingual toys serve as affirmation of bilingual identity? What other roles can bilingual talking toys play in bilingual families?

We can expect that toys in the bilingual family can serve a combination of functions:

- n Bilingual toys can be used to reinforce the social presence and value of bilingualism as a phenomenon in the United States. In the language of Sutton Smith, such toys can be used “to over-determine” the significance of bilingual and multicultural identity. As *Chapter 2 Bilingualism and Culture in the United States* asserted, the promotion of bilingualism as a social category can be one of the ways of preserving heritage languages and diversity in the United States.
  
- n A bilingual toy can reinforce the child’s sense of confidence in being bilingual, and provide the child with an example of two-language character that can be incorporated in the child’s imaginary play. As Sutton-Smith points out, toys can become powerful agents of self-identification. Although this transformative event sometimes depends more on the circumstance of the child rather than on the particular toy itself, the availability of bilingual toys gives the child opportunities for bilingual identification that a world of monolingual toys does not.

- n The role of bilingual toys in the bilingual family can vary according to the play context. The toys will have different roles if they are used in the play between an adult and a child, children peer groups, or single children. The *Methodology Chapter* will discuss various scenarios and locations in which these play configurations will be observed.
  
- n In terms of education, bilingual toys can serve as a friendly, familiar context which *motivates* the bilingual child to practice both languages. According to *Chapter I*, motivation to use a language is a crucial factor in the development of bilingualism. The project La Classe Magica, discussed in *Chapter IV: Cross-sections*, provides an example of a similar toy project which was used to reinforce the children's language competency and self-confidence. The Chapter on *Methodology* will discuss in detail the constraints which the technology and design of the toy, and the nature of the project itself, impose on the educational benefit of the toy. The particular ways in which the toys influence the design of the toy prototypes in Bilingual By Design will be discussed in the *Design Chapter*.

***The toy isolation paradigm vs. the purpose of making talking cultural toys: If toys serve isolation, how can toys serve language and culture development?***

To some extent, the argument of the toy isolation effects collides with the idea of bilingual toys created to promote the cultural and linguistic development of children in



bilingual families. It is redundant to say that language and culture are agents of social communication, and their learning and practice requires social interaction. While bilingual toys play many of the same roles that other toys do, they also play a special role in connecting children to language and culture. With this in mind, the question for the media designer is: what kinds of toys can promote a sense of pride of bilingual identity and culture, increase the motivation of the children to use a certain language, help the shared play activities of children and parents, and potentially even help the linguistic proficiency of the children in both languages?

Bringing up children requires the passing on of a complex set of skills: the ability to participate in a community and make bonds, as well as the ability to think and act independently. To say that toys are solely used for isolation means to forget that children share toys, that some large toys are primarily created for team play and parents spend time playing with their children. Most of the activities in Ecole Bilingue that I observed outside of the time when children worked on homework were related to group play: chess playing, constructing blocks, playing ball, etc. Furthermore, I noticed that the parents took significant interest in the toy. In the family interviews, a number of the parents suggested that by purchasing certain kinds of toys, they can communicate to their children the values of sharing two languages as an important event. Because toys have a dual effect—as socializing elements as well as tools for isolation—the role of the bilingual toy prototypes may be understood better in the context of the interviews and toy studies.

***Chapter conclusion:***

The toy theories of Brian Sutton-Smith allow us to explore the general research question of this study: Can bilingual toys serve as affirmation of bilingual identity? What other roles can bilingual talking toys play in bilingual families? Such questions will be explored through a design study of toy prototypes and interviews with parents and children. The evaluation of the toys will be examined through the lens of toy theory and the understanding of bilingualism summarized in the first three chapters.

# Language and Play Cross-sections: Literature Review of Related Projects

## Chapter 4

---

This chapter aims to review the previous research that has been done in the field of language-oriented educational toys. The toy project La Clase Magica is one of the very few projects that explore the connection between bilingualism and toys. This project will be examined in its particular use of Vygotsky's model of the zone of proximal development as a successful model for the development of bilingualism through play. Furthermore, the research performed at Justine Cassell's Gesture and Narrative Language at MIT, and especially the project SAGE, holds a particular interest to this study. These systems will be discussed for they have provided meaningful models and inspiration for "Bilingual By Design." Since it is impossible to explore all projects that study language and play cross-sections, this study will only focus on the projects listed above, which were selected because they are the most relevant to the Bilingual By Design study.<sup>11</sup>

***La Clase Magica: enhancing the learning potential of bilingual children through work in Vygotsky's "zone of proximal development," (Vasques, 1994)***

---

<sup>11</sup> In addition to these predominantly academic studies, the Bilingual By Design research and design have been informed by the interaction design of a number of recently-developed commercial projects such as the talking dolls of Language Littles, the Neurosmith talking toy system *Little Linguist*, the talking dolls Diva Starz by *Mattel*, or the voice interaction of the innovative LeapPad electronic board and book system by *LeapFrog*. However, the development and applications of these commercial toys will not be a central point in Bilingual By Design, because of the limited availability of academic research connecting the physical design of the toy with language acquisition theories and statistical research in their use of bilingual families in particular. None of these products is marketed as an artifact created for bilingual families.

La Clase Magica is a computer and telecommunications instructional environment that invites the collaboration of bilingual children and adults in play activities that help enhance the literacy skills of bicultural/bilingual Mexicano children in Southern California. The instructional goals of La Clase Magica are informed by Vygotsky's concept of the *zone for proximal development of children*. This theory claims that by building on the previous knowledge that is already familiar to the child, a more skillful individual (or an adult) can help the child master an activity and perform it without assistance (Vygostky, 1978). Applied to the understanding of second language acquisition, this theory suggests that children learn new language concepts if they can relate the new experience to a concept and an environment that they are already familiar with. According to the author of a study on this bilingual program, Olga Vasques, (Vasques, 1994, page 120), "when given the opportunity to use their background experiences as tolls for the pursuit of further understanding, children can display a level of performance not possible without this kind of buttressing."

### ***Interaction design for bilingual children in La Clase Magica***

The particular environment of La Clase Magica strives to create zones of proximal development by inviting the children to participate in a series of play activities spread in a maze of twenty two activity rooms. The center is supervised by El Maga (the wizard), a computer base animated character that handles written complaints and makes written suggestions for the games of the children, and by a number of adults and competent

graduates of the program. The children have a wide choice of video and computer games, board games and toys, which use both English and Spanish language in their interaction. Both English and Spanish are spoken in this environment. The goal of the game activities, many of which are commercially designed games such as first person shooter video games, is not to provide learning by themselves, but rather, to create an environment where children and adults act in collaboration: reading the game manuals, making decisions about the game, exploring new levels, helping each other with unfamiliar vocabulary. Thus the games provide a context of familiar activities, “a proximal development zone,” where the children develop from players and learners into people ready to supervise other children in their play. Through this playful collaboration, the children are encouraged to explore technical, oral and writing literacy skills in both languages.<sup>12</sup>

### ***La Clase Magica and the toy theory of Sutton-Smith***

The collaboration approach adopted by La Clase Magica differs from the “toys-as-isolation” theory of Sutton-Smith described in the previous chapter. According to Sutton-Smith toys are predominantly used in solitary activities. La Clase Magica uses toys and games as a context for collaboration between children and adults, and children and their peers. The social context provided allows the children to speak and develop their knowledge in oral and written Spanish and English, and develop their technical expertise. If identification with the toy and game occurs, than it is also complemented by the

---

<sup>12</sup> (Vasques, 1994) does not provide statistical data on the number of children that participated in the program, or any assessment techniques used to measure the progress of each child.

additional perspective provided by the adult consultant, such as in the case of conversations around first person shooter games described by (Vasques, 1994.) A supporter of the Sutton-Smith theory might claim that La Clase Magica becomes a meaningful activity precisely because it denies the usual isolating use of toys and complements it with human interaction. The bilingual play becomes an educational activity because of it occurs as a zone of proximal development for bilingual children supported by senior individuals. Thus the value of the toys and games in this case is not inherent, but rather, is derived from the social, collaborative context that surrounds them. This implication—the value of playing the toy in isolation vs. the value of playing with toys in a social context, will be one of the parameters we can explore in the *Analysis* Chapter.

Some of the emphasis of Vasques's research of La Clase Magica emphasizes the importance of providing these Mexicano children with technical tools, toys, and adult attention that they might not otherwise receive in such abundance according to (Vasques, 1994). The difference between this research and the focus group of Bilingual By Design lies in the different social groups that it is working with: it is not reasonable to assume that the participants of the Bilingual By Design study would be deprived of technology and adult attention. Therefore, if the principles guiding La Clase Magica are to be applied to the French-English bilingual group at hand, the attention focus has to be given on the creation of zones of proximal development as related to language, and not to general language and technology advancement.

***Making space for voice: Language oriented toys at the Media Lab, MIT***

The Gesture and Narrative Language group at MIT has produced some of the most innovative technologies and toys for voice communication and language development. Rather than explore all the projects of this group, I will focus on the story-telling systems SAGE, which involve an approach to language and toys which is particularly close to the intentions of Bilingual By Design.

***SAGE: using technology to explore language and identity (Umaschi Bers, 1997)***

SAGE (Storytelling Agent Generation Environment) explores a new approach to interactive storytelling and creative play. Based on Papert's theory of constructivism, which believes that children learn by building new connections between pre-existing concepts and materials, the project SAGE invites children to construct personal narratives by telling personal stories, listening to stories, and creating their own story-telling interactive programs. The SAGE system is modeled after the story-telling tradition of Hasidic sages, who listen to people's problems and concerns, ask questions to understand the situation better, and offer an inspirational comforting story. The pilot study exploring children's reactions to SAGE was divided into two parts. In the first part, children were invited to talk to a soft-body toy, the agent that listens to the child and gives him a comforting story. In the second experiment, children were invited to learn a simple visual programming language, and create a visual representation of their own sage, and stories that the sage can narrate to its followers. The artificial intelligence system behind these

toys is only developed to the extent that the experiments function in a Wizard of Oz mode: a person behind the screen is operating the system, listening to the child and directing the interaction. The goal of this system is not to develop automated linguistic competencies, or fully fledged voice technologies, but to explore one way in which technology can accommodate personal narratives, (Umaschi Bers, 1997).

SAGE supports identity formation and communication in multiple ways: it helped the children explore their personal narratives and meanings; it invited them to think about the design of storytelling and story-listening machines, and promoted supported their initial grasp of the fundamentals of interaction design and programming. The children in the pilot study reacted positively to the interaction with the soft-bodied sage. They had to suspended disbelieve so they could accept that the sage is as an intelligent system, and accepted its feedback stories with interest. The personal sages that they created explored issues related to their private worlds and values: the children, their parents and the researcher found that the stories disclose the inner world of the child, (Umaschi Bers, 1997).

### ***Understanding SAGE in the framework of Sutton-Smith's toy theories***

The SAGE system presents an innovative approach to story-telling and toys. It is possible that none of the toys Sutton-Smith used in his research had a similar ambitious goal in terms of their technology interaction with a tangible toy, a computer system, and a programmable language for children. Thus it will not be entirely accurate to apply the



literal meanings of Sutton-Smith's theory. Furthermore, the theory underlying SAGE is based on the constructivist theory of Papert, which discusses meaningful toy play as a process of construction and discovering meaning. Papert's interpretation of education and play is similar to Sutton-Smith's theory of toys as agency. According to Sutton-Smith, toys do not determine the child's interaction and fantasy world, but serve as building blocks to the child's imagination and story-telling. Similarly, Papert's theory has been adapted to the design of toys that serve as building blocks and materials for children.

The SAGE system carries an interesting meaning when it is examined by the lens of the theory of toys as isolation and comfort. Indeed, it takes the idea of privacy between the toy and the child and gives this interaction "new wings" in the form of increased interactive features. As Sutton-Smith notes, the best comfort toys are those that resemble human features such as voice, conversation, softness, etc. In his theory, SAGE can be seen as an exemplary comfort toy, which serves the child in the absence of a compassionate adult or peer. At the same time, the creators of SAGE have brought up the interaction with the toy as a social context: the sage stories were discussed between the children and parents, and between the child and the researchers. It is probably safe to assume that the children would not have been able to learn how to program their own sage if they did not cooperate with a sympathetic researcher. Therefore, SAGE is placed in a general social context that makes it more than a comforting partner; the interaction between parents, researchers and children generated by the toy adds to the creative value of the play and design experience.

### ***Points of similarity and difference between the projects SAGE and Bilingual By Design***

In many ways, SAGE and Bilingual By Design hold some common goals and methods of research. Both of these projects attempt to explore the child's sense of identity through an interaction with a tangible technology toy. Since tangible toys are a natural part of a child's world, they are used in both projects as a friendly "interface" to the language interaction. While SAGE involves more complicated software and a more sophisticated voice interaction, both projects suffer from the limited abilities of voice-recognition software and technology that supports voice communication in general. At the same time, Bilingual By Design focuses on bilingual children and aims to encourage children's sense of linguistic identity: a subject which is not discussed in SAGE even though some of the children in its pilot studies were bilingual.

### ***A humanities approach to children's media design: a concern for the role of toys in the larger context of family, identity and media world***

Finally, this paper offers a type of research that is generally out of the focus of the studies presented above (SAGE and La Clase Magica). This research is concerned with the role of the toy as it fits the larger context of the child's world: the role of the toy in the family, the role of the toy in its relations to the child's sense of cultural and linguistics identity, and the role of the toy in the general linguistic and cultural context of media the child is exposed to. This paper is trying to enrich the design approach of these studies, which

have been important models for this research, with a more detailed understanding of the social and cultural dynamics involved in toy playing.

### *Using a design study as a research method: testing theory through design-based research*

By definition, a design study presents a controlled intervention in a multi-factor environment (a classroom, institution or social group), (Zaritsky, Kelly, Flowers, et al., 2003.) According to a series of papers on this subject published at the “Educational Researcher,” (Cobb, Confrey et al., 2003) this is a relatively new, yet quickly growing field of educational research and innovation. A design study as a method presents more than an exploration of the technical and design functions of a product: it aims to test the validity of a theory, and to add nuance and improved understanding of the different factors that play a role in the success of the design. Design-based research is “an emerging paradigm for the study of learning in context” through the systematic design and study of instructional strategies.<sup>13</sup> Thus a design research study is more than a test of a prototype: it is a practical test of theoretical assumptions.

Bilingual By Design evolved over two semesters. It involved theoretical research in the field of bilingualism and toys along with the design toy prototypes for bilingual children.

---

<sup>13</sup> The Design-Based Research Collective, “Design-Based Research: An Emerging Paradigm for Educational Inquiry.”

Through my research, I found that there are few projects which explore the connection between bilingualism and play with toys, and that there have been only limited efforts in the toy industry and academia to create toys to bilingual children. At the same time, my research into the role of toys in the family suggested that toys can be powerful agents of identity. Thus the research question of this study evolved: Can bilingual toys serve as an affirmation of bilingual identity? What other roles can bilingual talking toys play in bilingual families?

***Design stages: identifying the research problem, creating prototypes and testing***

According to (Zaritsky et al., 2003), a typical design study involves a number of stages:

- *A stage of exploration and expansion:* “Effective product design begins with an unconstrained stage in which effort is directed at deciding if the problem is a problem, brainstorming solutions, and studying prior attempts,” (Zaritsky, et al. page 33.)
- *Prototype creation and testing:* Once the research problem has been identified, the designer makes simple tangible prototypes or virtual mock-ups. User-testing of the prototypes allows the designer to understand the role of the product in the context of its use. Depending on the product, a small or large pool of users might be selected for study. Smaller studies cannot provide statistically quantitative data, but they can provide useful qualitative data.
- *Diffusion of innovation:* At this stage, the innovation is communicated through media channels to its users and the society at large.

The Bilingual By Design study involves the first two stages described above: the stage of exploration and expansion, prototype creation and testing. As an academic project, Bilingual By Design does not involve the diffusion of the toy product and study into the channels of commercial product-making, which is implied in the last stage, Diffusion of Innovation, outlined by (Zaritsky, et al., page 33).

The initial sketches and the first toy prototype were discussed with teachers of bilingual children, and evaluated in the framework of evolving toy theory described in Chapter III. The second prototype was tested with children at Ecole Bilingue. The second and the third prototypes were discussed in interviews with parents at the French Cultural Center in Boston. The particular design steps and considerations addressed in this design study are discussed in Chapter VI, *The Design Process: Technology, Interaction Design, Prototypes*.

***Research strategies: contextual inquiry, interviews***

The research strategy for the Bilingual By Design study involves contextual inquiry with children and interviews with children, parents and teachers. The first of these methods, contextual inquiry, aims to collect information from the user's own environment, (Druin, Benderson, Boltman, et al., 1999). Rather than invite the users into a research lab or a room prepared especially for the research study, the children are approached and interviewed in their homes or natural play environments. The goal of this method is to

avoid the unnecessary presence of unfamiliar circumstances which cause stress or distract the user. In the study of *Bilingual By Design* I interviewed the children in three particular environments: the after-school play space at the Ecole Bilingue, the homes of some of the children,<sup>14</sup> and in the open-area lobby of the French Cultural Center in Boston. While I was interested in observing children at their own living rooms and home play spaces, most families were unable to accommodate such requests. The studies were thus led at the after-school play room of Ecole Bilingue, or at the lobby of the French Cultural Center, which are also familiar play spaces for the children.

The second technique used in this study is the interview, a classic method of exploration. Short informational interviews were conducted with each child from Ecole Bilingue and The French Cultural Center in Boston that participated in the study. Altogether, I interviewed nine children, from four families, as well as three teachers of bilingual children. In each interview, I was asking questions in a friendly, informal way, and quickly wrote some of my first impressions on a note pad. I recorded the interview in more detail after the meeting was over. In each case, I asked the person interviewed to read and sign a statement of informed consent. Children younger than seven years of age were not asked for a written statement, and their parents received and signed a letter on their behalf. The participants were informed that they could stop the study at any time and for any reason. The interviews and toy studies were not photographed, tape-recorded or video recorded. The statements of consent and the entire procedure of the interviews and studies was examined and approved by the Committee on the Use of Humans as Experimental Subjects (COUHES) at the Massachusetts Institute of Technology.

---

The children were asked questions about their view of the toy prototypes. In addition, I explored what were the major elements that influence their linguistic development: the languages spoken at home, and the languages they used in their studies and play. I tried to gather as much evidence as possible about the languages each child used in his or her favorite video games, television sessions, films, books, play dates, etc. I also interviewed the teachers and parents of each child. When working with adults, I was able to explore the perspective the bilingual caretakers—their motives and means for creating a beneficial bilingual environment for these children.

### ***Methodological questions particular to the study of bilingualism***

According to (Wei, 2000, page 476), the study of bilinguals involves particular methodology considerations that often remain neglected by researchers. Wei states that a number of researchers make a mistake in not describing the particular factors which might have influenced the results of the study:

- Who is the researcher?
- Is he or she monolingual or bilingual in the languages explored? Is the researcher male or female? Of what age?
- What is the disciplinary (academic) background of the researcher?
- What is his or her view of bilingualism?
- What does the analyst try to find?



- What is the relationship between the researcher and the speaker?
- What is the research context?<sup>15</sup>

As the author of the Bilingual By Design study, I was also the only researcher to conduct the interviews and toy studies involved. I am fluent in English and proficient in French, and I have lived and studied both in the United States and in France. In addition, I speak native Bulgarian and Russian, which makes me very considerate of the issues of bilingualism and youth. As a young multilingual woman and a student, I tried to establish a friendly, informal attitude towards the children, parents and teachers in the study. I conducted each study in the language chosen by the children or parents involved. My study is informed by my research on bilingualism and toys within the interdisciplinary framework of Comparative Media Studies. I believe that my personal and academic background was favorable to creating a friendly atmosphere conducive to the bilingual toy study and the understanding of bilingual toys as children's media.

---

<sup>15</sup> Wei provides a detailed explanation and examples of the importance of each of these considerations. His description can be found at: Wei, Li, "Methodological Questions in the Study of Bilingualism," *The Bilingualism Reader*, Routledge, London and New York, 2000, pages 476-486.

# The Design Process: Technology, Physical Design, Interaction Design

Chapter 6

---

“Students who want to design toys should be warned and discouraged. Toy design is an extremely difficult process.” This was the first comment I got from Professor Woody Flowers, an eminent MIT designer with long experience in product design, when I asked him for a consultation about my project. Indeed, toy design is an unusually challenging field. It is no simple task to make an object that can entertain a child for a long time, pass a long list of safety requirements, and withstand drooling and violent play. Electronic toys in particular present a special task even for an accomplished engineer: they require a masterful implementation of small, durable and efficient electronics and toy materials. I was drawn to the field of toy design in part for the challenge it presented. I am grateful that I received the help of a number of engineers and designers who helped me make the three prototypes I developed.<sup>16</sup> This chapter will discuss each prototype by describing the thinking that determined its visual design, voice interaction design, language combination choice, technology, and potential play uses in the bilingual family.

---

<sup>16</sup> For this project, I have used custom designer sound systems created by the Grassroots Invention Group at MIT (for the Tower and related sound boards), and a sound recording and production system created by Alexander Direkov, AMD Design (for the sound recording and reproducing board). I am grateful for the generous help and advice in electronics and design given by Bakhtiar Mikhak and Chris Lyon (Scooby) from the Media Lab at MIT, Alexander Direkov from AMD Design, Andreas Hofmann and Bruce Deffenbaugh from the Artificial Intelligence Lab at MIT.

### ***Design categories in the creation of a bilingual talking toy prototype***

The design of a toy prototype will be discussed in terms of the major considerations that influenced the creation of each of the three prototypes:

- ***Visual design:*** What is the interface of the toy? Does it create a positive emotional reaction and interest on behalf of children and/ or adults?
- ***Voice interaction design:*** As *Chapter 4: Cross-sections* describes, the current level of voice technology design limits the extent to which voice can be used in the interaction with a tangible object.
- ***Language combination choice:*** Does the toy use both languages? Does it include literal translations of its stories in each language, or different content in each language?
- ***Technology design:*** What kinds of sound board, microphone, speakers, etc create the sound system? Is the sound clear and adjusted at an appropriate volume level?
- ***Possible play uses of the toy in children's solitary, peer or family play context:*** As Sutton-Smith describes, children tend to use toys as building blocks for their own imagination, and the same toy can provoke a variety of different play scenarios for different children. However, in the case of interactive talking toys, some of the "play options" the toy involves are coded together with the design of the toy. Even before the toy prototype is tested, the designer has the ability to make some projections of the possible roles of the toy in different contexts such as solitary play and collaborative play with peers or parents.

- ***Other considerations:*** Is the toy safe and durable? Children often put toys through difficult durability tests: they throw the toy at the ground or at each-other, they might spill water or food on the toys, or try to break it in order to see its inner design.

The following paragraphs will describe how these considerations materialized in the concrete designs of Mary-Marie, The Red and the Yellow Ladybugs.

### ***Language combination choice in bilingual toy systems***

*Chapter 1: Bilingualism, Children's Language Acquisition and The Bilingual Family* established that bilingual children are not always fluent in both languages. Bilinguals have different combinations of language skills. For example, so children might have strong skills in English and weaker skills in French, or vice versa. This is an important question in the design of voice interaction for bilinguals. To resolve this tension, a system for bilinguals can “talk” in one language at a time, in order to target the “weaker” language area that the child needs to develop. A second approach can present the content of the interaction in both languages, with the meaning of each interaction presented in close translation in both languages. This approach is particularly well suited to children who are expected to have a weaker understanding of one of the languages, and need the presence of the more familiar language in order to understand the phrases in the other languages. In a variation of this approach, the toy can have different content in each

language: it can narrate one kind of story in French, and a different story in English. This approach is more suitable for balanced bilinguals with equally advanced skills in both languages.

The toy prototypes in *Bilingual By Design* have followed an approach to language choice that presents the same content translated in both languages. Chapter I recognized that the child's motivation to use and learn a language is one of the most important factors in developing bilingualism, and the use of toys is trying to promote this motivation in a friendly way. A system that only uses one language, or presents different content in two languages, one of which is weaker for the child, has the potential to confuse bilinguals who don't have the same skills in both languages. However, an unfamiliar expression in French might be better understood if the child hears it side by side with the English translation of this phrase. Thus each of the talking toy prototypes uses sentences presented in close translation in French and in English.

### ***Prototype 1***

#### ***Mary-Marie: the bilingual doll***

The first prototype for this project was created as a class project for my Media Lab Class: *How to Make Almost Anything*.<sup>17</sup> Mary-Marie is a soft-body character with a bilingual

---

<sup>17</sup> MIT, MAS.863, Fall 2002, "How To Make Almost Anything," Professor Neil Gershenfield. This course is oriented towards work with a long list of rapid prototyping techniques, such as the laser cutter, 3D printer, machining tools, electronics, etc.

sensor board placed in the middle of its body. It has a number of dresses with buttons, which triggered different parts of a story recorded in French and in English.<sup>18</sup>

The idea of Mary-Marie is similar to the design rationale behind the soft interfaces of SAGE, a Media Lab Project discussed in Chapter 4. Both projects rely on an interactive talking soft-bodied figure, which create a positive emotional connection with the child. However, this doll was not supported by a complex software system such as SAGE, which determines the more limited scope of its responses: it talks when the different buttons on the dress are prompted, but it does not claim that it can “listen” to the child.

---

<sup>18</sup> A similar voice interaction can be found in two commercial products: the Leap Pad by LeapFrog and the Language Littles dolls (*Appendix* )



Figure 1. Prototype 1: The Doll Mary-Marie has a button interface which reads the tags on her different dresses and tells a story in French and English.

## Visual design

This is a soft-body doll that has a dial-pad system attached to its body. The dial pad can be covered with a number of different dresses and objects that are button operated. Each object placed on the body of the doll has a French and an English switch. The child can use the dial pad of each object to prompt the doll to tell short stories and play games.

The inside of the body contains the electronics kit: the tower, batteries, 4 sound record layers and three speakers. The head and limbs of the doll are re-used parts of the commercial toy Dora The Explorer by Fisher Price

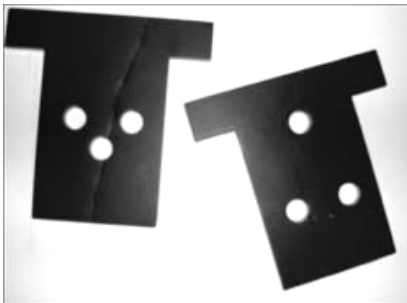


Figure 2. The Dresses of Mary-Marie

Cardboard dresses that get attached to the body with Velcro snaps. Each dress has holes created to activate a different set of buttons on the doll. Generally, the buttons on one side activate English content, the other side activates the same content in French, and the middle button invites the child to continue to the next dress.

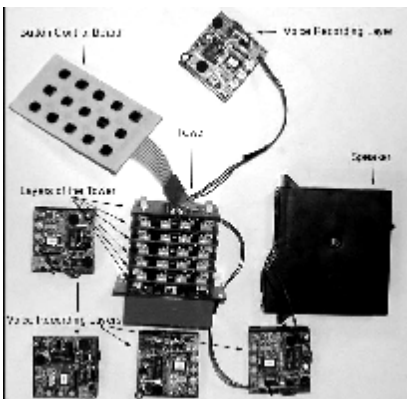


Figure 3. "The Tower," button board, speaker and sound boards of Prototype 1

## The technology design

This system uses the layers of the **TOWER**, a rapid prototyping tool created by *Baktiar Mattik, Grassroots Invention Group, Media Lab*. This system contains the tower, five sound boards, a button board and speakers. The tower contains a programmable pick chip and a series of layers connected to voice recorded devices (or VR). The button board is connected to the top layer of the Tower. Each time when the user pushes one of the buttons, the speaker produces a sound from one of the sequences on prerecorded sound on the VR.

### ***Interaction Design***

In this prototype, I tried to create an interactive story, which is revealed as the child puts new dresses on the doll. The story was broken down to a few sentences, and each sentence was recorded in French and in English. The child's role was to change the dresses-objects, press the different buttons, and listen to the story. I recognized the limits of this approach, which did not allow much space for creative feedback on behalf of the child. However, I was hopeful that by developing this system in the first stages, I could expand the capabilities of the toy in the later stages and add more space for creativity.

### **Interaction Design for “The Story of the Hungry Caterpillar” in French and English**

Dress 1 This object introduces the doll, and explains how the child should interact with the dress and the buttons on it.

Dress 2 This dress tells the first part of the story ( example: The hungry caterpillar never had enough to eat. Munch-munch, it wanted to eat all day and it punched holes into everything around)

The dress has two rows of buttons: English and French.

Dress 3 The second part of the story

Dress 4 The end of the story



## Observations based on Bilingual Prototype 1

Having completed this prototype allowed me to reflect more carefully on the type of toy I wanted to design for bilingual children. I discussed the prototype in preliminary interviews with teachers at Ecole Bilingue and fellow engineers. Following is a list of technical, visual and interaction design critiques and lessons I derived from working on Mary-Marie.

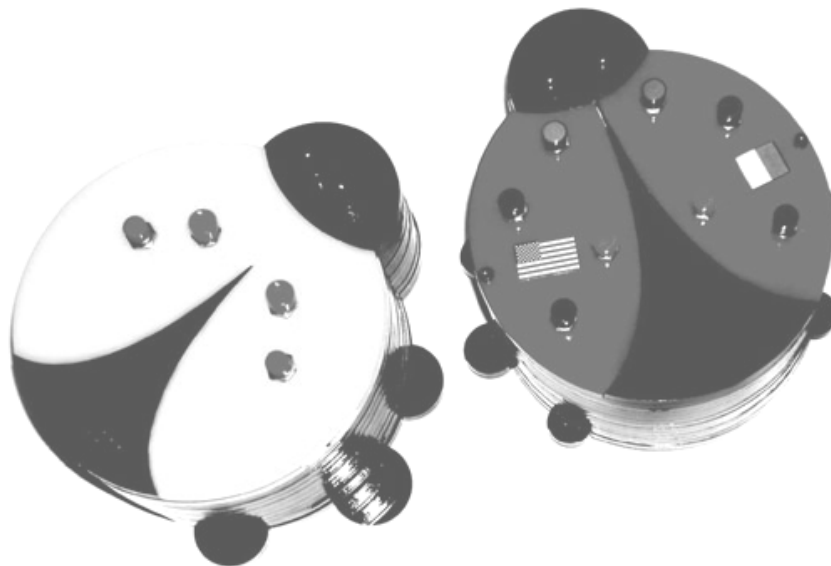
- *Visual design: dolls as identity?*

As we saw in Chapter 3, toys can serve as a powerful expression of the social values and personal identity. Working on this doll, I realized that creating a toy prototype that resembles a human figure involves careful decisions related to the gender and ethnicity of the toy figure. Following my personal preferences, I created a toy that looks like a doll, and speaks with a female voice. In the process, I realized that doll playing has very strong gender connotations, which might have resulted in the alienation of some of the students I planned to interview. Furthermore, the students that I was working with at Ecole Bilingue came from more than thirty different countries and a number of different ethnic backgrounds. It was difficult to imagine what kind of a visual representation of race and culture could honor such a diverse student body. Since the goal of this thesis is not to explore gender and race issues, I decided that my future prototypes should avoid using a human-like toy. This process influenced my choice of a gender neutral, non-human representation in the second prototype: The Red Lady Bug.

- *Technical evaluation and criticism prototype 1:*

I used a new type of rapid prototyping environment created by the Grassroots invention Group. Being in the first stages of its development, this system contained a number of “bugs” and came with little documentation to support its use. The system that I came up with as a novice engineer is unnecessarily large: the wiring of the parts required three speakers, multiple tower layers and a combination of four voice-recording devices. Such a complicated system is very fragile and would not be able to withstand long hours of operation or “rough play”: the wires come apart easily, the components weigh on each other and the batteries drain quickly. The microphone produced a harsh, loud sound, which needed to be softened in the future prototypes by redesigning the box for the electronics.

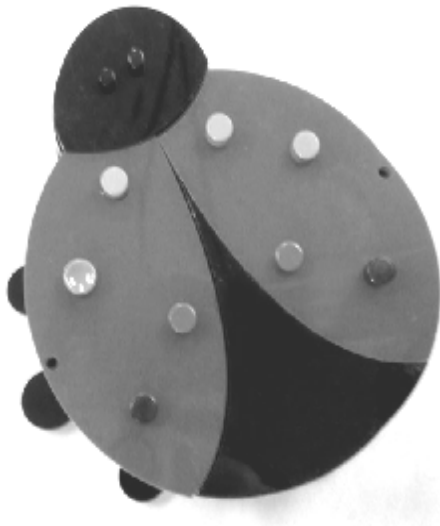
***Prototypes 2 and 3: The Red and The Yellow Lady Bugs***



*Figure 4. Lady Bugs 1 and 2*

### ***Prototype 2: The Red Ladybug***

The second toy prototype, the Red Lady Bug, is a more gender and race neutral toy. It has two wings with four color-coded buttons on each wing: the buttons on one wing produce short phrases in French, the other- in English. The sentences refer to different expressions of emotion: in each language, the lady bug can say that it is hungry, that it enjoys the day, or that it is very proud to be able to speak so many languages. At this stage, I was not ready to account for any of the possible educational benefits of the toy: I was mostly interested in how children would react to a toy that claims to “speak” in the two languages they use in their lives. The design details of each prototype are described and evaluated in the “Design Process” chapter and in “Appendix 1: Technology in Details.”



*Figure 5. Prototype 2, The Red Lady Bug has 8 color- coded buttons*

### **Visual design**

The second toy prototype, the lady bug, has two wings with four buttons on each wing. Each wing represents a language: English or French. When the buttons are pressed, the lady bug says 4 different sentences translated in French and in English. The body of the toy is made of plastic, using connected layers cut out on a laser-cutter.



Figure 6. Prototype 2, The French and the American flags were added as language tags



Figure 7. Prototype 2, The bottom view of the toy shows its supporting legs and the openings for the sound coming from the speaker

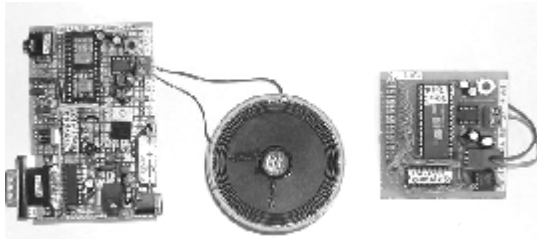


Figure 8. The sound recording board, the speaker and the voice playing board for Prototype 2.

### **French and English flag-tags**

The French and American Flag were added after the first toy testing. The children did not automatically know which language to expect from which wing, and the little flag labels serve to clarify this confusion.

### **Bottom view**

The bottom layer of the toy is raised on six small rubber feet. In order to achieve strong and clear sound quality, the body of the toy presents a tightly sealed box which amplifies the sound and lets it out through a series of holes in the center of the bottom layer.

### **Technical design: recording board and voice playing board**

The design system uses a board, chip, and recording program designed by AMD Design. Each voice file is recorded on a computer, and transferred via a USB cable to the recording board. The chip from the recording board is then inserted in the board inside the ladybug. This is a sensitive and time consuming process, which makes it difficult for the user to record new phrases.

### ***Prototype 2: voice interaction design and potential use of the toy in the bilingual family***

Prototype 2, The Red Lady Bug, is a talking toy that can produce short sentences and stories in French and English. New stories can be recorded to the toy with the use of a computer and custom-designed recording boards. For the purposes of the toy study, the eight short sentences translated in French and in English were recorded to the toy. The sentences were recorded by the same cheerful female voice (in French and in English):

*1. Hey, I feel really special! I am a ladybug that can speak all these languages!*

*2. Hey, I don't like this. Please stop!*

*3. Hey, this is great! This is really wonderful!*

*4. I am hungry! Give me some flowers! I want to eat!*

Engaged in a solitary play with this toy, the child might push its buttons to hear each phrase in French and in English. A child playing with his parents can use the toy to record their favorite stories in each languages, and play them together. The French and English marks on each wing encourage the family to use both languages in their play. When the child is left alone, he or she can use the toy as a “transitional object” that carries the voices and stories of the family (Sutton-Smith, 1986). Used in the presence of monolingual children, the toy can become a way for the bilingual child to demonstrate and share his or her knowledge of a language the other kids do not know. Thus the bilingual talking toy can provide a way for the child to visualize and play with bilingual identity, in ways which will not be possible in the world of monolingual toys.

### *Prototype 3: The Yellow Lady Bug*

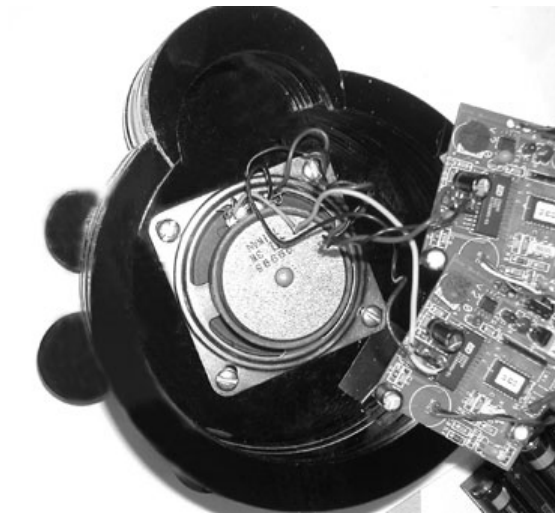


*Figure 9. Prototype 3: The Yellow Lady Bug can record and reproduce sentences.*

#### **Visual design**

To expand the interactive potential of Prototype 2, The Red Lady Bug, I designed my third toy prototype: The Yellow Lady Bug (note: in case you never met one, please know that small yellow lady bugs do exist in many parts of the world. In certain part of India, you can even find blue ladybugs). The Yellow Lady Bug has two sets of buttons on each wing: one can record a phrase, and the other button plays back this phrase. The toy allows parents and children to play a few games of “teaching” the ladybug how to speak one language or another.

The yellow lady bug allows children to press a button and record a message, and then press another button and play it back.



*Figure 10. The speaker and the sound boards fro Prototype 3*

#### **Technology Design**

This prototype uses two boards from the Tower Project, and connects them to each of the four buttons. Two small microphones are attached directly underneath the wings; the speaker is attached at the center of the bottom layer. Small holes at the bottom layer allow the sound of the speaker to come out.

### *Voice interaction design and possible play role in the bilingual family*

The uses of Prototype 3, The Yellow Lady Bug are similar to the ones described for Prototype 2, with the difference that the recording procedures are simpler, and occur at the toy itself (rather than through a computer and a recording board).

### *Chapter conclusion*

Talking bilingual toys can provide children with motivation to interact in two different languages, and to imagine bilingualism as a social category in a way that is not available through the world of monolingual voice systems. Since each child can interpret the meanings of the toy differently, and adapt it to his or her imagination in a particular way, the observations of the toy studies, presented in the following chapter, will provide us with a better understanding of the play meanings of the prototypes.

# **Analysis of the Bilingual By Design Study**

## *Chapter 7*

---

Based on the observations of toy testing and interviews with French-English bilingual children and parents, there are four major findings of the Bilingual By Design study. First, the children observed in the study tended to be strongly influenced by the use of American English as the majority language of their society and they tended to use English, and not French, as the main language of their play and social activities. This observation reflects the patterns of monolingualism presented by (Wei, 2002) and (Grosjean, 1986). Furthermore, it suggests that for bilingual children, who come from a variety of cultural backgrounds, their common knowledge of English and American culture becomes the largest basis of their shared experience. Second, according to (Sutton-Smith, 1986) toys in the family can serve both isolating and socializing purposes. While both of these uses are possible in the long-term applications of the toy, the results of the Bilingual By Design study suggest that the toy prototype displayed the most potential influence to the child's language skills and practice of the minority languages when the toy was used in a social setting (such as a structured school environment, an interaction between two peers, or a play between an adult and a child). Third, the toy study observations confirm Seiter's argument that toys tend to be interpreted and used differently by parents and children: parents see toys as one of the ways to prepare children for learning and acclimatization to their future roles in society, and children use toys as a means to develop their imagination and social belonging to a peer group.



Fourth, the parents' reactions to the bilingual toy were influenced by their own views of bilingualism. Two out of the four families interviewed used French language with their children on a regular basis, and were skeptical of a toy that combined translated statements in both languages. They wanted the toy not only to expose their children to both languages (which was already happening in their homes), but to introduce them to the culture associated with each language. Therefore, these parents believed that it was unnecessary and possibly confusing to combine two cultures within the same artifact. On the other hand, the other two families could not expose their children to the French language on a regular basis: for them, a toy using translated phrases and recording activities had the useful function of adding to their children's daily experience in the French language. To accommodate the different skill levels of each child in French and English, and the different approaches of parents towards the promotion of bilingualism, *Bilingual By Design* suggests that media design for bilinguals should include both toys that promote basic language skills, as well as toys that promote a more sophisticated set of cultural meanings associated with each language.

### **The children, parents and teachers interviewed for *Bilingual By Design***

The following paragraphs give a brief introduction to each of the children and families involved in the *Bilingual By Design* study:

Interview 1: **Jean**<sup>19</sup>, Ecole Bilingue, 6 years old

---

<sup>19</sup> All interviews in this study were anonymous. The children, parents and teachers are all referred to by pseudonyms given by the author. The names selected bear no intentional description of the person they were given to, other than they distinguish one participant from the next.

Languages spoken at school: French and English

Languages spoken at home: Armenian, English and French

Jean is completely bilingual in French and in English, but he feels more comfortable with having our interview in English. He comes from an Armenian family, and he speaks Armenian with his parents and two siblings.

Interview 2: **Nina**, Ecole Bilingue, 6 years old

Languages spoken at school: French and English

Languages spoken at home: French and English

Nina is a quiet and shy girl, who is fluent in both English and French. Her mother is French and she speaks French with her, and her father is American and converses with his child in English. Nina prefers to be interviewed in French. She smiles as she listens to the sentences recorded in the Red Lady Bug, but does not play with the toy very long.

Interview 3: **Boris**, Ecole Bilingue, 6 years old

Languages spoken at home: English and French

Languages spoken at school: English and French

Boris speaks French and English with his mom and English with his dad. He does not have any talking toys at home, and he is not really interested in what the Lady Bug has to say. Yet he is very curious about the electronics of the toy, and decides that the toy can translate the sentences you record on it.

Interview 4: **Alex**, 6 years old and **Anita**, 6 years old

Alex's Languages spoken at home: English, Italian, French

Anita's Languages spoken at home: English and French

Alex and Anita's Languages spoken at school: English and French

Alex and Anita are classmates in the first grade program at Ecole Bilingue. I lead a toy study when both of them are present so that I can observe how children in a small group interact with the toy prototypes. Alex and Anita had a conversation about the toy, and laughed together when the ladybug said it was hungry. They explained how the toy works to their friends, and spend more time playing with the toy, and asking me questions about it, than did Jean, Nina and Boris when I interviewed them individually.

Interview 5: **Parents: Mrs. and Mr. Goldberg**, French Cultural Center

Children: **Maria**, 4 and half years old

**Alan**, 6 years old

**Matthew**, two and a half years old

Languages spoken at home: Hebrew and English, occasionally French.

The parents speak to each other in Hebrew and English.

Languages spoken at school: English pre-school (for the older boy), once a week French classes for each of the three children, French-speaking nanny

Mrs. Goldberg comes from Israel, and Mr. Goldberg is originally from France. Their family has lived both in Israel and in France, and now they live in the United States. Their children have learned and used the language of each culture they lived in. However, now that they live in the United States, it has been difficult for the parents to use French as frequently. Most of the time they talked to each other in Hebrew or English, and use English when they have company. Mrs. Goldberg stays at home to take care of the family, she speaks to the children in Hebrew, and she is concerned that they are losing their French skills. To keep up the development of French skills of their children, the Goldberg's have hired a French nanny and accompany the children to language lessons twice a week; they have considered using the services of Ecole Bilingue, but found that the private school is very expensive. Media in French is popular in their home: the children have DVD's, books and tapes in French. I interviewed the family (in English) during one of their regular visits to the French Cultural Center. They do not own any toys that use or teach language, and don't recall having seen any similar toys on the market.

Interview 6: Parent's name: **Helena Jones**

Child's name **Yvette**, 6 years old

Languages spoken at home: English (with mother and father) and French (with mother). In front of the child, the parents speak English to each other.

Languages spoken at school: English pre-school, once a week French class

Yvette's mother is an American who has lived in Europe for a long time; she speaks fluent French. Yvette's father was born in Africa, with French being his native language. He finds it too difficult and distracting to speak French to his daughter while he is in the United States, and the mother in the family is the real driving force behind the family efforts to teach French to the child. Yvette used to speak French when the family lived in Europe, but now that she is back in the United States, she does not feel confident in her French skills anymore. Every weekend Yvette and her mother visit the French Cultural Center for Yvette's language lessons in the bilingual group. The family does not have a computer or a TV, but they are all avid readers. One out of eight stories that the mother and child read together is in French; they borrow new books from the French library each week. Yvette does not have any language oriented educational toys, but she says she would love to have toys like the ladybugs.

Interview 7: **Marielle Blanche**

Children: 31/2 and 6 months

Languages spoken at home: French (at all times spoken with the mother in the family) and English (spoken in the father). The parents speak in French and English to each other.

Mrs. Blanche is a French woman who immigrated with her parents to the Unites States when Mrs. Blanche was in high-school. She is fluent in French and in English, and her husband, who is an American, is learning French so that he can communicate with her side of the family and teach his children French. The mother always speaks to their two children in French, and the father- in English. Mrs. Blanche is staying at home to raise her children, so French is slightly more dominant in their environment than English. Her children have a lot of toys, but they do not have any that involve human language. In general, Mrs. Blanche does not find that toys contribute to their education or language skills, and she is not sure that a single artifact should combine two languages: each language is associated with its own culture and environment.

Interview 8: **Alexander Delecourt**

Children: Nicholas, 5 and a half years old and Alexandre, 2 and a half years old

Languages spoken at home: English (with mother) and French (with father). The parents speak to each other in English.

Languages spoken at school: English pre-school, once a week French class

Mr. Delecourt is a Frenchman married to an American woman. He and his family speak to the children in French, and his wife, who speaks fluent French, speaks to them in English. He sometimes finds French video tapes from Canada, or plays DVD's for them in French. The boys play some French CD Rom games, which they seem to understand and enjoy immensely. Mr. Delecourt is skeptical about the use of a talking toy in his family: he thinks that his children will learn French from their family, and finds that his sons like construction toys and video games better than talking toys.

Interviews 9, 10 and 11:

**Mrs. Ferrero, Mrs. Peters and Mrs. Jones** are all teachers at the Lower School French-English Bilingual program at Ecole Bilingue.

### **The curriculum and goals of Ecole Bilingue**

Ecole Bilingue is a private school in Cambridge and Arlington which teaches a full curriculum in French and English. The goal of the school is to prepare balanced bilinguals: students who are fluent in both languages, and understand each academic subject equally well in every subject. All the children entering the school are expected to

speak French at some level, but since the majority of applicants are already fluent in English, there is no requirement for English proficiency. The students at Ecole Bilingue start their schooling with different language skill sets, and the school helps them build their knowledge in the multiple applications of either language.

In order to achieve its goals at the first grade level, the school assigns each class of students to two teachers: one who speaks only French with the children, and another who speaks only English. Each teacher has a separate classroom, and the children are expected to speak the language of the classroom they are in. The main subjects are taught in both languages, switching the language from semester to semester. Each week the students have bilingual activities, such as reading, translating and playing educational games, where they are invited to use both languages in the same room. Many of the children are not prepared to answer questions in their weaker language; the teachers allow them to express themselves in either language they want, but the teachers themselves always speak the assigned class language and patiently invite the students to do the same.

The teachers share with me that they are always short of time: the bilingual platform they teach requires double the time and effort of a monolingual platform. Many of the activities they teach have to be modified to fit the skill levels of different children, or the teacher has to assign groups of students with different skills sets to work together.

The study of languages is never separate from a cultural and academic context: the program at Ecole Bilingue aims to respect the various backgrounds of their students by



providing a variety of Francophone and Anglophone resources. The library at the school presents children and parents with an elaborate selection of original or translated text in French and English: classic titles such as “Les Miserables” as well as irreverent, humorous cartoons such as “TomTom et NaNa.” The teachers at Ecole Bilingue are also aware of the cultural diversity of their students, who come from more than thirty different countries around the world: the school celebrates multiple national and religious holidays, and strives to expose the children to traditions and stories from different Francophone and English-speaking countries.

The after-school program at Ecole Bilingue is a space where children can finish their homework, play some games inside and outside the classroom, engage in clubs and wait for their parents to pick them up. In the first grade after-school program the students have few homework assignments to do, and they spend most of their time playing. The room is equipped with a various games and toys, mostly oriented towards social play: play tables, board games, constructors, drawing boards, balls, jumping ropes. There is one computer with CD-roms, but even this machine is used by a few children surrounded by their peers, and not by children playing by themselves. The walls of the room are covered with artwork and notes to the students written in French and English. The friendly, playful atmosphere of the after-school program makes it a convenient location for the Bilingual By Design toy study.

## **French Cultural Center language program**

Having completed a number of toy studies with first graders at Ecole Bilingue, I decided to schedule some additional interviews at the French Cultural Center in Boston. In the French Cultural Center I had access to children *and* parents from bilingual families.<sup>20</sup>

Furthermore, I expected to find a group of children with different language skills. Both of these factors provided valuable insight and diversification to my toy studies.

The French Cultural Center's Language Program aims to educate children in French, as opposed to the goal of Ecole Bilingue, which teaches English *and* French. Most of the children at the Center already go to American schools where English is spoken at all times; therefore, they need additional practice and lessons in French. The classes of the Center meet once or twice a week and do not provide the intensive full-time training available at Ecole Bilingue. According to Madame Annick Mercanti, the Manager of the Educational Division of the French Cultural Center, the goal and the challenge in the program is to motivate the children to speak in French, and develop their vocabulary, grammar and reading skills in the language. Most of them already know a lot of vocabulary and understand French: but they do not often have a motivation or proper environment to communicate in French. The French Cultural Center provides its students with personal attention in a small class setting and various learning activities appropriate to their age: story-telling, reading, vocabulary games, drawing in coloring books enriched

---

<sup>20</sup> The Director of the Bilingual School was reluctant to involve the parents in additional activities, and I was only able to lead formal interviews with students at Ecole Bilingue.

with short phrases, watching movies and cartoons in French. I chose to work with the students enrolled in the Bilingual Course, who are the most advanced French speakers.

“They serve chocolate éclairs to the children and they claim that they are providing ‘a French Experience.’ Language lessons in French can be so snobbish and fashion-motivated,” says Mr. Golberg, a Frenchman himself, in criticism of some of the other French programs for children in Boston. His family has tried a few part-time programs (excluding Ecole Bilingue,) before they started coming to the French Cultural Center every weekend so that his three children can maintain their skills in French. Mrs. Golberg likes the structured and friendly approach of the program, the serious emphasis on language learning, and the variety of lectures, story-telling sessions, films and library resources provided by the French Cultural Center. He seems happy to have found a program that is not superficial and trendy, but structured and genuinely committed to language-teaching.

Many families find the weekly course at the French Cultural Center as an alternative to the program at Ecole Bilingue, which they find is too expensive, or inconvenient in some other way, and they According to the statistical background provided in (Wei, 2002) and (Grosjean,1986), the families at the French Cultural Center are in a situation similar to that of the majority of bilingual families in the United States, who do not have extensive formal support for bilingualism. This situation differed from that of the families at the Bilingual School, who enjoy the institutional support of a rare and expensive bilingual environment. Unfortunately, I was not able to lead formal interviews with parents from

Ecole Bilingue, which would have provided a basis for contrast and more detail understanding of each group. The Bilingual By Design study focuses on the responses of the bilingual families at the French Cultural Center as they describe the linguistic background, the use of language related media artifacts and the parent's evaluation of the toy.

### **Analysis of the interviews and toy study findings:**

#### ***The bilingual children in the study tend to use American English as the main language for socializing and play***

According to statistics about bilingualism in the United States, heritage languages in the United States are lost within three generations (Harding and Riley, 1986), and there is strong social pressure on bilingual children to stop using the minority language and use American English only (Grosjean, 1986; Sommers 2003). My research group study shows that the participants in this study reflect the patterns established in (Harding and Riley, 1986; Grosjean, 1986 and Sommers, 2003). The children that I observed have a strong tendency towards speaking English as their primary language outside the family and outside their structured course activities in French. For example, the play in the after-school program at the Bilingual School tended to use English as the main language of play. The teachers at the school confirmed that while children use French in their structured class activities, English quickly becomes their main social language once they are outside the classroom. According to the parents interviewed at the French Cultural

Center, teaching their children to speak English was not a difficult task: all the children interviewed at the Center attended English-speaking schools, and even if they came from a French-speaking country, they were quick to adapt to the language of their peers in the United States. Learning and using French, on the other hand, would not have been possible for these children without the constant support and dedication of their parents and teachers. This is why the courses offered at the French Cultural Center emphasize the learning of French only. In such circumstances, the parents and teachers were the main propellers of bilingualism, who reinforced the use of French in personal contact with French-speakers, or through a series of structured activities such as private language lessons, book readings, movies in French, etc.

The various functions of language (Harding and Riley, 1986) such as building up relationships, exchanging information, thinking and playing with words<sup>21</sup> are always enacted in relation to both the languages and culture of a given environment, and the presence of a majority language reflects on the kinds of thinking and learning that the child undergoes. The use of English as opposed to French by the Boston and Cambridge students reflects in many ways the connection between language and the culture that surrounds children. As in the case of Mrs. Jones and the Goldberg family, the children of these parents spoke very good French when they lived in Europe, and started to lose their skills and motivation to use French when they arrived in the United States. The range of meanings available to each child in French or American culture was tightly connected with the majority language of each country: in each case the environment of the extended

---

<sup>21</sup> The different functions of language according to (Harding and Riley, 1986) are discussed in further detail in *Chapter 1: Definitions of Bilingualism*.

family, friends and media influenced the child to participate in a different cultural stream and a different language.

Another reason for choosing English as the main language for socializing among the children might be dictated by the inherent multiculturalism of the student at Ecole Bilingue. As (Seiter, 1993) explains, children display a strong interest in creating a fund of cultural meanings and a sense of a society around their common knowledge of television, toys and games. The student body at Ecole Bilingue exhibits truly diverse international and linguistic backgrounds: the students come from more than thirty different countries; they speak French and English with different levels of proficiency; many of them speak one, two or three various languages at home; each of their families has a different approach to language combinations and policies for the maintenance of bilingualism. Children in Ecole Bilingue might be finding that the common issues they have to discuss in their play, outside their academic curriculum, might all be related to the dominant American English culture that surrounds them, and not to the segmented, different experiences they might have had with the Francophone world at their homes and extended families.

As (Sutton-Smith, 1986) and (Seiter, 1993) explain, media in the family has multiple uses: it can serve as a “baby-sitter” that engages and isolates the children from their parents, an educational experience, a shared body of knowledge that connects the children to their peers or a common experience that children and parents discuss together. What goals do bilingual parents have about the language and culture expressed in a given

media? Are they satisfied to have American media characters who speak French, as in the French version of Disney movies, or would they rather expose their children to characters produced in France and Europe, such as Tintin, the family Barba, etc.? Given the multiplicity of uses and purposes of media in the family, one can argue that bilingual families would value the presence of different kinds of media. In such a situation, both American media produced in French, and French characters speaking French or even borrowing English phrases to color their language, can have a role in reinforcing the language and culture sophistication of bilingual children. As this study suggests, parents with different approaches to bilingualism and use of French language in the family find that they need different media for their children. The parents that use French with their children on a daily basis assume that their children already have enough personal exposure to the language, and they suggests that they are more interested in having toys that combine cultural elements from each culture. On the other hand, parents who do not speak French to their children daily value any kind of additional exposure to the language, and express interest in a toy that develops basic language understanding.

Thus the variety of linguistic competencies and approaches to bilingualism necessitates the development of a number of different types of media: certain bilinguals will benefit from having talking toys that expose the children to basic language skills, and others value talking toys that offer a sophisticated understanding of culture. It is not necessary or even possible to combine all of these functions within the same play artifact. Thus, in its design, the ladybug toy prototype and the study created around it focus on issues of using two languages within the same artifact, and the particular role of the toy in French

and English bilingual families. An alternative approach and different study might have situated the toy character and its bilingualism in a more cultural-study approach: for example, a bilingual toy study might have focused on the kinds of culture that bilingual families want to have for their children. Indeed, the possibility to combine elements of two cultures in a bilingual talking toy is not at all marginal to the Bilingual By Design study. However, as one of the few studies in this interdisciplinary field, Bilingual By Design focuses mostly on the role of two language combination within the same artifact. It is motivated by the notion that the English-dominant monolingual media, which is prevalent in the United States, does not offer the opportunities of language-learning and affirmation of bilingualism as a social group that is present in the world of bilingual media.

(Grosjean, 1986,) emphasizes that the child's *need (or motivation)* to stay bilingual is one of the key factors influencing the preservation of minority languages. Furthermore, the learning of a language, according to (Harding and Riley, 1986,) is a social activity dependent on the motivation *and* learning opportunities presented to the children (discussed in *Chapter 1: Bilingualism, Children's Language Acquisition and the Bilingual Family*). This factor was strongly reflected in the interviews with teachers and parents of bilingual children, who emphasized the importance of motivation for learning a language and displayed various different ways of creating such learning environment. Yvette's mother, Mrs. Jones, shared with me that her daughter gets upset when her American-born mom tries to talk to her in French when they are in the United States:



*“She used to yell at me and get really angry when I talked to her in French after coming back to the United States from France. Yet she spoke good French when we were in France. I think she finds it strange and “phony” that I speak to her in French if I am not a native speaker, and we are in the US. However, she likes to read so much that she does not mind it if we read books in French—this seems to be a ‘natural’ use of the language in her mind.”*

*Mrs. Jones, a parent, French Cultural Center<sup>22</sup>*

Says Mr. Delecourt, the French-born father of two boys:

*“I try to speak to the boys in French, and I don’t get upset when they reply in English, which they usually do. I am not forcing them in any way: I don’t want them to dislike French. I believe they will pick-up the language naturally, and become confident step by step.”*

*Mr. Delecourt, a parent, French Cultural Center*

The parents cited above support the bilingualism of their children in different ways. Mrs. Jones, who is an American fluent in French, has found out that her daughter insists on speaking English with her while they are in the United States. Such strong preferences for assigning one language for each environment are often encountered in bilingual children (Harding and Riley, 1986), who insist that they only speak one language with a given person, or only one language in a given social setting. Yvette, Mrs. Jones’ daughter, may

---

<sup>22</sup> All quotes are reported as closely as possible to the original statement of the interviewee. However, the quotes were transcribed from notes taken during the interview, and since the interviews were not tape-recorded, the author does not guarantee the exact reporting of the quote word by word.

be reacting negatively to a use of French language that is not motivated by her environment; it is possible that in her mind, speaking French in Boston is connected with educational activities, which she rejects when she is not in school. Mrs. Jones has found that reading to her daughter is one of the substitute ways in which they can continue using French in their daily lives. According to her, one out of eight stories they read together is in French, and her daughter enjoys the experience and does not object to the language choice. The family does not own a television set or a computer,<sup>23</sup> thus books in French have become an important way for the promotion of French.

In the case of Mr. Delecourt, who is a Frenchman married to an American woman, the children in the family did not object to their father's use of French in all their private conversations. Most of the time the children did not respond to him in French, but they understood what they were told and responded in English. The father believed that over time, his children would naturally develop their vocabulary and language confidence, and he tried to be consistent in his language use and patient and supportive of their progress. According to (Harding and Riley, 1986), this mixed bilingual communication, with the parents speaking in the minority language of the society and the children responding back in the majority language, is common among bilingual families. Addressing an audience of bilingual parents, (Harding and Riley, 1986) remarked that the bilingualism forms under various circumstances, and there is no single "right" approach to support a bilingual child. While (Harding and Riley, 1986, page 80) claim that the parents should

---

<sup>23</sup> The fact that Jones' family does not own a computer or a television set seems to be motivated by their understanding that television and technology are not central to their lives at home, and not by economic factors as might be the case with certain families. The precise reason for this family choice to exclude television was not commented or further discussed in the interviews.

adopt a consistent approach to language use with their children, they also state that “...there are many different ways of being consistent: one parent, one language; a holiday language and a round-the-year language; a weekday language and a Sunday language; the first one to speak chooses the language; everybody speaking their preferred language...”

The need *motivate* the children to speak their weaker language in a variety of friendly ways is also recognized by the teachers at Ecole Bilingue, who pay a lot of personal attention to each child to ensure that everybody feels comfortable and included in the classroom. According to the teachers, recording and talking toys, like the Yellow Lady Bug in the Bilingual By Design study, can be one of the ways children get enticed to speak their weaker language without shyness. The teachers recognize that using an unfamiliar language in a social setting can be embarrassing. As a visitor at the after-school program at Ecole Bilingue, I once noticed that some children were mocking one of their peers for not being to understand English very well: one boy asked his friend in a slightly confrontational tone “hey, do you understand English,” and, unable to reply in English, the boy addressed cried out a series of nonsensical words in very fast French. Much as the teachers would like to make the learning atmosphere welcoming to all children regardless of their skills, the inherent differences among the languages and social backgrounds of different children are bound to produce tension and unease among the children. In the Bilingual By Design study, the teachers found that encouraging children to “teach” the Yellow Lady Bug to speak by recording phrases on the toy, may give the child some sense of agency and a motivation to practice the language that he or she is learning.

While the parents and teachers that I interviewed believed that personal contact was the best vehicle for learning a language, they often resorted to the use of media as one of the factors that motivate the child to use the minority language. In media landscape of the United States, which displays a strong bias towards monolingualism (discussed in *Chapter 2*), parents often found it difficult to provide bilingual or French media artifacts for their children. The Goldberg and Delecourt families both tried to expose their children to television programs in French, but the standard channel available for this purpose, TV 5, is not oriented towards children. Both the children at Ecole Bilingue and the French Center reported that they enjoy watching films in French, yet families encountered technical difficulties in using French tapes in the United States: each country had a different system with incompatible standards. Thus videos and books had to be purchased or ordered through Canada, which was an inconvenience for the parents. Mr. Delecourt reported that his children enjoyed playing video and computer games in French at the family computer: his children seemed to understand the technology better than their parents, and the language barrier did not seem to affect them. Other families, such as Yvette's, did not have a computer or TV at home, but borrowed French books from the library. Recently, the spread of DVD's with French language versions facilitated the viewing of movies in French. Both the students at Ecole Bilingue and the French Center mentioned they enjoyed watching Disney films in French. Ironically, these translated versions-- a tactic used by Disney to extend their international market-- were also popular and helpful to bilingual families in the United States. In general, the parents believed that the American market should be more accommodating to the needs of families who speak

a language other than English. Therefore, the parents were enthusiastic about the general idea of creating toys for bilingual children as one of the ways to motivate the preservation of French language in their daily lives.

### ***The socializing and isolationist uses of bilingual toys***

Sutton Smith, in his theory of toys as children's culture (1986), identifies multiple roles that toys play in children's lives. According to Sutton-Smith, toys serve both as a form of isolation and as a symbol of the family bond. In the Bilingual By Design study, however, the social role of the toy, which is de-emphasized in the isolationist theory of Sutton-Smith, proved to be by far the more efficient way of using talking toys for the purposes of language learning and bilingualism promotion. The children in the study tended to spend the most time playing with the toy prototype not when they were on their own, but when they were surrounded by a group of their peers or accompanied by an adult or peer. I observed that single children playing with the toy were shy and reserved, and did not interact with the object beyond pushing each of its buttons once. In groups, however, the children animatedly discussed the technology of the toy and its ability to speak two languages. They pushed the buttons with more confidence and spent more time recording their voices and switching between one toy and the other (when both prototypes were present). At first, the children recorded short phrases such as "Hello" and "Bounjour;" some of them tried singing a song with made-up words, or melodies without words; at a second try, the children recorded short sentences similar to what the Red Lady Bug was saying: "I am hungry, I want to eat flowers (*in French*)."

As the research on La Clase Magica shows, toys can be valued not as much for their inherent value, but as artifacts that promote interaction between peers and adults, and create Vygotskian zones of proximal development where children can expand their language potential. In the Bilingual By Design study, the concept of bilingual toys was more valued by bilingual families in its social and bonding aspects between parents and children and children and their peers, rather than in its isolationist aspects. The families in the study who were interested in having bilingual toys indicated that they planned to use the toy in parent-child play: Mrs. Blanche said that she would consult her daughter on which stories to record and work on the recording together, Mrs. Goldberg found that the toy could help her create an activity that would interest all of her three children, who were at different ages. Similarly, the teachers who reviewed the toy prototypes found primarily social ways in which to use the toy in the classroom. They suggested a sample activity where the toy could be used in groups of two children: using the Yellow Lady Bug, each group would record phrases from a book and would share their stories with another group. The Bilingual By Design study suggests that toys cannot replace the essential role of human interaction in language learning. Therefore, the Lady Bug prototypes may not have significant educational value when they are used outside of a structured interaction between parents and children and teachers and students.

Another relevant theory of for understanding toys, proposed by (Seiter, 1993), claims that toys have different meanings for children and parents: each “camp” in the family has a different use and understanding of toys. The results of the Bilingual By Design study

support this argument. For children, bilingual toys became yet another manifestation of the efforts that concerned adults around them exerted towards the development of their multiple language competencies. They reacted to the toy as a familiar artifact with a new social meaning attached to it, as a popular technology innovation and a toy they could use as a conversation piece with their bilingual peers. According to Seiter, children also use toys as a common cultural fund that they can refer to. Unfortunately, the study at hand was not conducted at sufficient length for these “socializing” effects of the toys for children to be examined.

In the Bilingual By Design study, the parents saw the toys as tools for expressing their values and preparing their children to be adults with multiple competencies and cultural perspectives. Seiter suggests that parents often see toys as a way to socialize their children into the values and class behaviors that they see proper or aspire to. In a society that promotes English-speaking at the expense of other languages (Chapter 1), the minority language upbringing was a private, family effort, and as a private, family artifact, the bilingual toy embodied this effort for the parents. Parents themselves reacted positively to the idea of bilingual toys as an addition to the scarce market of non-English or bilingual materials they found in the United States. For some parents in the study, the toy became a way to express to their children the value of bilingualism, and a way to motivate them to speak French as well as English. Says Mrs. Jones:

*“If I buy a toy that speaks two languages, I can show to my child in one more way that I value bilingualism. In general, I have found that spending time with her*

*playing, reading, talking in both languages shows her that speaking these languages is important for me, and invites her to share my commitment.”*

*Mrs. Jones, a parent, French Cultural Center*

As she reported in the interview, Mrs. Jones was not interested in having media technology such as a computer or a television set in their home, but she had an open attitude towards an electronic toy that spoke two languages. Mrs. Jones openly criticized American schools for starting to teach foreign languages to children too late in their academic career. A parent well-read in the issues of children's language acquisition, Mrs. Jones believed that children should be taught foreign languages when they are young. In her mind, the bilingualism of the toy prototype made this an interesting artifact that expressed her own belief in teaching foreign languages to children at an early age.

According to Mrs. Goldberg, the bilingual talking toy can expose her children to some more French sentences and new vocabulary, and help them establish the connection between the English translation, which they understand, and the French, which they are learning. Mrs. Goldberg, a native of Israel, mentioned that she would love to have her children maintain the French skills that they acquired when the family lived in France, but that it is very difficult for her to speak French to the children at all times. She found that a toy that interests them in hearing and recording in French might help her find an educational activity that all three children enjoy.



However, there were diverging voices that claimed that combining two languages within the same object was unnecessary. Part of the skepticism of these parents towards the toy originated in their general mistrust of the toy industry, which often markets educational toys that do not really have significant impact on the children's intellectual development. However, I found that a significant part of the parents' objections to the toy were motivated by their own understanding of bilingualism.

One of the parents who objected to the use of the toy claimed that each culture and language is best experienced in its own monolingual environment, and that a bilingual talking toy was a rather confusing, unnecessary effort:

*“I find the experiences of French and English cultures are separate, they should be experienced separately, and enjoyed once at a time. Life in France is something separate from life in the United States, and I do not see how or why the two experiences can be combined.”*

*Mrs. Blanche, a parent, French Cultural Center*

During the interview, I reminded Mrs. Blanche that her daughter's experience of each culture might be different from hers. Mrs. Blanche became bilingual as a teenager, and not as a young child. She emigrated from France to the United States as a young adult this might explain why she harbors a strong and separate sense of each place. For her daughter, who is born in a home that uses two languages all the time, the difference between the languages and cultures might be experienced in a different, more seamless

manner. Mrs. Blanche nodded in agreement after I made this comment. Furthermore, Mrs. Blanche's attitude towards the bilingual toy prototype seems to be influenced by the "one parent, one language" model of bilingualism she has adopted. (Harding and Riley, 1986) describe this as one of the possible approaches towards raising a bilingual child, where each of the parents consistently uses one of two languages with the child. Mrs. Blanche speaks to her children in French, and her husband addresses them in English. Mrs. Blanche might be transposing this structure to the toy artifact, and finding that the use of two languages in the same artifact is inconsistent with the model she has adopted as a parent.

Another person who disliked the idea of bilingual toys, Mr. Delecourt, a Frenchman and a father of two sons living in Boston, believes that mixing languages in a toy is not a good idea:

*"Children get confused by language mixing, and I am talking from experience. I usually speak to the boys in French, it is my native language. I remember that a few years ago, when the children were younger, I would sometimes say a phrase in Franglais: something that uses both French and English words. Adults usually enjoy that code mixing if they speak both languages, but my children seemed really confused. This is why I am not sure that it is a good idea to put two languages at the same toy, like you have done."*<sup>24</sup>

---

<sup>24</sup> I believe that in his observation, Mr. Delecourt is confusing two phenomenon: the mixing of words within the same sentence, which is common for young bilingual children, and code-switching, which is the ability to change from one language to the next without destroying the grammar structure of either language. The toy prototype I have made relies on code-switching, not on language mixing.

*Mr. Delecourt, a parent, French Cultural Center*

Mr. Delecourt found that his two sons enjoy playing with constructors and video games much more than like playing with talking toys, so he was not convinced that “cramming” two languages in a toy can make things any better. He had noticed that his children play video games and CD-roms in French and do not object to the language use; it is possible that a virtual world incorporating French language might be a more interactive media for bilingual children. Furthermore, both Mr. Delecourt and Mrs. Blanch found that personal contact with French-speaking family was the best way for the child to learn French: each of them had made a commitment to speaking to the children in French only. At the same time, the other parents in each case addressed the children in English, which suggested that an integrated two-language approach was not out of question in either case.

The usefulness of bilingual talking toys was further supported by teachers, who spoke of the motivational advantages that a toy can have for children learning a language.

Teachers were quick to position the toy within structured reading exercises, where talking and recording to the toy and sharing the recorded messages serves children who would otherwise be shy to speak or bored with the scholarly activity. Yet how do the teachers and the parents understand the toy prototype in different ways? (Harding and Riley, 1986, page 21) explain that there are some differences between language learning at home and at school:

*“The school social context makes children familiar with interaction which is pedagogically motivated, in contrast with the multiplicity of goal underlying interactions at home, and also familiarizes them (students) with the requirements of conversations involving many participants, in contrast with smaller numbers at home.”*

*Harding and Riley, The Bilingual Family, 1986, page 21*

Teachers and parents might be projecting a different set of applications to the toy: the teachers imagine social play and structured play which helps the children integrate in a pedagogically-driven environment, while the parents imagine the toy being used in a more open-ended way.

### ***The different ways in which parents and children understand the use of bilingual toys***

One of the reasons that influence the different understanding of bilingual toys for children and parents is the diverging ways in which their view their own bilingualism. For most children, bilingualism is a most natural state: they have been born or brought up in this condition from a very early age, they accept bilingualism without questioning it, and they tend to feel most comfortable around other children who are bilingual themselves. They expressed no sense of being extraordinary or un-natural because of their bilingualism. With the exception of Yvette, who often felt self-conscious to be described as bilingual and told her mother that she does not feel she has strong skills in

French after leaving France, most of the other children expressed no anxiety at their bilingual state.

For many parents, bilingualism was consciously recognized as an enriching cultural experience that is important and worth passing on to their children. According to Mrs. Jones, a speaking many languages is a window towards new cultures and ways of thinking. At the same time, bilingualism was a frustrating cultural reality: bilingual upbringing required doubled time and resources, and sometimes became a quality that reminded parents that they are immigrants and people whose hybrid identities can never be fully understood by either culture they belonged to. Mrs. Blanche shared her sense of displacement:

*“As a French person living in the United States, I always feel like there is a part of me that is missing no matter where I am. There is always a part of me that I can not translate. I feel natural when I am surrounded with other people that are bilingual and bicultural like myself.”*

*Mrs. Blanche, a parent, French Cultural Center*

The ambivalent parental attitudes towards bilingualism are reflected in their view of bilingual toy prototypes: some voices reinforced the value of toys as something that can communicate the “value” of bilingualism and found that the use of two languages is motivational for their children; other parents though that combining two languages within

a toy is not necessary and confusing, and that each culture is best experienced “on its own.”

### **Evaluating the expected uses for bilingual toys according to the results of Bilingual By Design**

After evaluating the roles of the major theories considered in this study, we should evaluate the over-all projection of the value of understanding bilingual toys in the family as it is discussed in the Bilingual By Design study. Based on the theories of toys by Sutton-Smith and Seiter, and based on arguments about bilingualism and language acquisition in children (Wei, 2000; Grosjean, 1986), in *Chapter 3: Toys and Culture*, we concluded with a projection for understanding bilingual toys in the family:

**Projection 1:** Bilingual toys can be used to reinforce the social presence and value of bilingualism as a phenomenon in the United States:

Results: Sutton-Smith establishes that toys are often one of the most stable ways in which a culture over-determines the roles and stereotypes it considers essential. One of the most important questions of this study has been: Can bilingual talking toys act as one of the ways in which United States culture over-determines the value of bilingualism as a social phenomenon? In the case of French-English bilingual children and parents interviewed in Cambridge and Boston, there is evidence that toys can indeed serve as one of the ways in which bilingual families communicate the value of bilingualism, and

motivate their children to use both languages: the parents in each family were excited to have designers pay attention to the linguistic and play needs of their families, which they often felt were ignored in United States media. The parents and teachers of bilinguals found that the use of bilingual toys can have educational benefits to the children and the toys, used in a social context, can increase their motivation to use the minority languages. The acceptance of bilingual toys in this group is influenced by its privileged class position, which allows these families to allocate extra time and resources to the development of bilingualism. Ultimately, the diffusion of toys as innovation, as (Zaritsky, Kelly, Flowers, Rogers, O'Neil, 2003) note, is a market phenomenon which depends on the marketing size of bilingual families, profit motivation, strategies and promotion channels of toy factories. Further studies in the field will be necessary to determine what the value of bilingual toys is for different designs of the toy interaction, different language and class groups, and larger samples with extended time-frame for their study.

**Projection 2:** A bilingual toy can reinforce the child's sense of confidence in being bilingual.

Results: Most of the children interviewed at Ecole Bilingue, a private bilingual school with an intensive program in both languages, accepted bilingualism as their natural state. While they displayed a stronger tendency to speak English rather than French, the children in general seemed to express no obvious anxiety or special pride of their bilingual condition. At the same time, some of the children at the French Cultural Center (as in the case of Yvette), were shy and insecure about their use of French, and the

toy, as predicted, helped this child overcome her shyness and use French in a friendly, familiar context.

According to Sutton-Smith, toys can also be important for children because they provide the child with a sense of agency and serve as tools for the child's imagination and identity formation. Unfortunately, as Sutton-Smith recognizes, the influence of toys on the child's imagination and identity is a private long-term process of interaction between the toy and the child's world. The study of Bilingual By Design does not involve a long term study which could provide comments on this theory, other than the evidence of positive emotional reaction and interest in the children in the toy.

**Projection 3:** The role of the toys in the bilingual family can vary according to the play context. The toys will have different meanings if they are used in the play of an adult and a child, a child and his peers, or single children playing with the toy (Sutton-Smith, 1986).

Results: The observations of Bilingual By Design confirm Sutton-Smith's argument that the use of a toy varies dependent on the context within it is used, as this Chapter discussed earlier.

- **Projection 4:** In terms of education, bilingual toys can serve as a friendly, familiar context which *motivates* the child to practice both languages.



Results: As we saw in the research on the bilingual toy program *La Clase Magica*, toys and games were useful in developing bilingualism not in the inherent values of their interaction with children, but in their contribution as artifacts for the communication between children and more experienced peers or adults. A similar case is observed in the study *Bilingual By Design*, where parents and teachers found that the toys playing and recording language can be used as community artifacts and beneficial play activity for the children. As Sutton-Smith recognizes, toys are an essential part of the world of children (or upper-class children in the United States, which is the case with the *Bilingual By Design* study), therefore a bilingual toy used in the society of parents, peers, or group activities structured by teachers can create a Vygotskian zone of proximal development for the children: a familiar and comfortable environment where experienced individuals can guide the child into mastering language concepts (as in *La Clase Magica*).

## **Conclusion: Future Work in Bilingual Media**

*Chapter 8*

---

No matter how well it is designed, a toy cannot match the level personal attention and care that a child receives from a parent or a peer. As Professor O’Neil, a Professor in the Foreign Languages and Literatures Department at MIT, stated in a letter on the subject of bilingual toys, “the essential element that children need in their linguistic environment is talking people, not talking toys.<sup>25</sup>” Therefore, the role of bilingual toys should not be to replace the time parents and children spend together. However, toys can serve as enabling objects, supporting a child’s play, self-realization and learning. The Bilingual By Design study helps demonstrate that a bilingual toy promotes playful interaction in both languages between the child and the toy, and between the child and his or her parents and peers.

### ***Bilingual Design: the challenge of accommodating multiple cultural and linguistic backgrounds***

As (Harding and Riley, 1986) observe, there is no single way to create a stimulating bilingual environment in a family. For example, in the Bilingual By Design study, members of the Golberg family speak predominantly Hebrew and English and

---

<sup>25</sup> A quote from an email interview with Professor Wayne O’Neil, Foreign Languages and Literature, MIT, quoted with the permission of the same.

occasionally French, whereas in the Blanche family, one parent speaks French and the other only speaks English to the child. As we saw in the previous chapter, parents who speak French to their children at all times may value a toy that teaches the child the cultural aspects of the language, while a parent who does not speak French to her child at all times may place more emphasis on a toy that allows the child to practice simple linguistic skills. The multiplicity of linguistic and cultural purposes in the use of a talking toy is a serious consideration in the design of bilingual toys for bilingual families.

The lady bug design used in the Bilingual By Design study was just one among many possible choices for creating toys for bilingual children. The choice of the non-human design reflected the need to accommodate the diverse cultural and linguistic backgrounds of the families in the study. In the case of French-English bilinguals, as in many other linguistic groups, the members of the group come from a wide variety of cultural and racial backgrounds. Their linguistic skills are just as diverse: children might have different degrees of competencies in each language, or have some areas that they know in one language, but not in the other.

***Bilingual design should situate the use of both languages within the cultural context that is interesting to the child, and that motivates the use of two languages***

According to (Harding and Riley, 1986) many bilingual children express a strong preference for sustaining certain consistent parameters within their bilingual communication, and for using each language in its “appropriate” context. Harding and

Riley emphasize the importance of explicit and consistent use of either language in order to create a sense of a reliable context where the child can focus on the meaning of language, and not feel confused and distracted by an unpredicted switch of languages. Some of the children in the Bilingual By Design study shared these preferences. For example, Yvette insisted that language use be motivated by the society she lives in: she speaks French when she is surrounded by French-speakers in Europe, but gets upset when she has to speak French to her American-born mother in the United States. Other children, like the sons of Mr. Delecourt, prefer to hear each conversation in one language, and strongly object to the use of mixed-language phrases. These findings suggest that the switch of one language to another within a toy-playing dynamic should not be random, but should be motivated by an event that the child can perceive. For example, the Red Lady Bug speaks French when the child presses the button on one wing, and English when the child presses the buttons of another wing; the language use is not mixed in either sentence, and each wing is labeled with a flag that designates the language represented. The same principle should guide the design of other bilingual media for children. For example, an electronic book for bilinguals might have the left page of the spread that responds in French, and the right page of the spread that speaks in English. A video game for bilingual children might have certain characters that speak in one language, and other characters that speak in a different language.

***Bilingual design should support parent/ child interaction as well as independent play***

In the Bilingual By Design study, the parents of bilingual children were the driving force and the main reason why their children developed skills in French language, which is a minority language in the United States. The bilingualism of the children was made possible only because the parents made this quality a priority, and devoted time, persistence and resources to their child's development in two languages. The parents that I interviewed made an extra effort to speak French and English in the family home, to send their children to private lessons or school, to purchase films, books and games in French and in English. However, despite their efforts, even in their privileged class position (discussed in the Methodology Chapter), the parents that I interviewed expressed their frustration with the difficulty of obtaining French media for their children. Because of the important role that parents play in the development of bilingualism, a bilingual toy should encourage social play between the child and his or her parents.

### ***In conclusion***

The heritage of multiple cultures represents an important part of the history, present, and future of the United States. For the country's many bilingual families, passing bilingualism to the next generation presents a complex and difficult private, social and educational task. I am grateful for having had the chance to work as researcher and designer on such an interesting problem. The design of bilingual toys and the study of material culture in bilingual families is a field that should have growing popularity in the design of children's media in a multicultural United States.

**OBSERVATIONS AND FIELD NOTES OF INTERVIEWS AND TOY STUDIES  
AT ECOLE BILINGUE AND THE FRENCH CULTURAL CENTER**

---

The goal of this chapter is to provide a detailed account of the interviews and toy studies conducted with French-English bilingual students, teachers and parents. The participants in these studies were volunteers selected from the French-English Bilingual School in Cambridge, Ecole Bilingue, and the French Cultural Center in Boston. The students from Ecole Bilingue participated in toy studies with Prototype 2, the Red Ladybug. Since the studies at the French Cultural Center were conducted at a later time, at this center I was also able to lead some studies testing Prototype 3.

These field notes are intended to serve as an informal introduction to each child, family and their reaction to the toy testing and interviews. The following *Chapter 8: Analysis* summarizes the research findings of the study and discusses its results as they relate to the framework of toy theories established in *Chapter 3*.

**Interviews and toy studies at Ecole Bilingue**

Ecole Bilingue is a private school in Cambridge and Arlington which teaches a full curriculum in French and English. All the children entering the school are expected to speak French at some level, but some of the children who come from other countries may start the school without any knowledge of English. Through its bilingual curriculum, the school prepares children in both languages so that by the time they reach high school, they are proficient in both languages.

The after-school program at Ecole Bilingue is a space where children can finish their homework, play some games inside and outside the classroom, engage in clubs and wait for their parents to pick them up. My observations begin in early spring, when the children are eager to go out and enjoy the first days of warmth and bright sunshine. At their course (first grade) the students have few homework assignments to do, and they spend most of their time playing.

---

**Interview 1: JEAN<sup>26</sup>, Ecole Bilingue**  
**Age: 6 years**

---

<sup>26</sup> All interviews in this study were anonymous. The children, parents and teachers are all referred to by pseudonyms given by the author. The names selected bear no intentional description of the person they were given to, other than they distinguish one participant from the next.

**Languages spoken at school: French and English**

**Languages spoken at home: Armenian, English and French**

According to his teachers, Jean is completely bilingual in French and in English. He comes from an Armenian family, and he speaks Armenian with his parents and two siblings. His spoken English is fluent for his age, and he prefers to speak in English at the interview.

Jean says he likes many toys, but he does not have a favorite one. He usually plays with his sister talking in Armenian, but they do not have any talking toys. His books at home are all in English, yet he recently borrowed a book in Armenian from his Armenian school. His family does not have TV, VCR or computer at home, or at least—not a computer he is allowed to use. His face gets animated when he mentions that he often visits his cousins' home to play video games and watch movies. All the games and movies they have right now are in English—but sometimes they can change the subtitles of DVD films and listen to the films in Spanish or French.

“This is a fat lady bug,” exclaimed Jean when he first saw the ladybug prototype, which is quiet large in order to fit all its electronic parts. He also noticed that the ladybug speaks with a “radio voice.” He was a bit shy and reluctant to push the ladybug buttons at first. I encouraged him to give it a try, and then he started pushing all the buttons. He listened to each message once and stopped playing with the toy. He said that he likes that the toy speaks in both languages, and he would not mind having a toys like that at home. I asked him if he would enjoy hearing stories recorded by his parents. “I am afraid this will be too much work,” said Jean. He was excited about hearing stories in Armenian—possibly because it has been difficult for his family to find artifacts in their language. This is the end of the study and I thank him for his participation.

---

**Interview 2: Nina, Ecole Bilingue**

**Age: 6 years**

**Languages spoken at school: French and English**

**Languages spoken at home: French and English**

According to her teachers, Nina is fluent in French and in English, yet she is extremely shy in reluctant to talk. Her mother is French and Nina speaks French with her, and her father is American, speaks very little French and converses with his child in English. Nina preferred to lead to interview in French.

Nina does not have any talking dolls, and she can't think of any toy that is her favorite. She said her library at home is very big: many of the books are in French, and some of them are in English. She does not have any books that are “bilingual” (having one page in English and one page in French). When she reads, she prefers stories in French. She

watches and movies in English, and has never seen any French movies. She does not use any computer programs or games.

I explained to Nina how the ladybug works. She smiled as she touched the buttons and listened to each message carefully. After I asked her a question, she said she understands what the ladybug is saying in both languages, and enjoyed the option to have both types of speech. She would like to have a toy like that at home, and if her parents can record stories, she will prefer some stories in French. She can not think of any particular stories that she would like more than others.

---

**Interview with school teacher: Mrs. Ferrero**

**Location: Guarderie**

Mrs. Ferrero likes the design of the toy and asks many questions about the way the toy itself was made. She finds that a toy like that can be really helpful when the children learn how to record their own messages connected with each button. She imagines that she can assign children to read a passage and record it on the toy, which will provide an extra incentive for them to do their reading. She also suggests that she can assign one child to record the messages, and a different child to listen to them. She finds that the structure of the toy as it is in its first prototype, with each sentence delivered in French and in English, can be very useful for children in the ESL program.

Mrs. Ferrero suggests that the buttons on the ladybug should be of the same color so that they can surprise the children.

---

**Interview with teachers: Mrs. Peters and Mrs. Jones**

**Location: The lobby of Ecole Bilingue**

The Director of the Lower School at Ecole Bilingue kindly helped me organize initial interviews with two of the teachers of first grade program. I invite Mrs. Peters and Mrs. Jones to tell me more about the particular challenges they encounter, and the approaches they use in their work with bilingual children.

The program they lead is located in two main rooms: one of the rooms is used for French lessons, and the other- for English lessons. Each teacher herself uses only one of these languages in her interactions with the students. The classes change rooms every day or week, depending on the schedule. The main difficulty in working with bilingual children comes from the fact that not all children speak English and French at the same level. The activities of the first grades often have to be assigned in different ways for each child, depending on his or her skills and areas for improvement. Time is never enough for these teachers, who often find themselves explaining each concept in French and in English,



and teaching the same subject in both languages so that the children can develop parallel competencies.

I asked the teachers if they find that students coming from France and the United States differ in any way through their behavior, fashion, interests, etc. The teachers said that all the children look the same, and other than the language barriers, there is no significant difference between the student. They informed me that the students from the school come from more than thirty different countries and a variety of racial backgrounds, which is not atypical for French-English bilingual children and bilinguals in general. There seemed to be no striking cultural difference between the children coming from different countries: as children, they all wore similar clothes, enjoyed similar games and stories. I was interested in finding out more about the style differences that students from different countries might display in their attire; I was hoping that this information can help me design an interesting attire for the Mary-Marie prototype. The teachers responded that according to the stereotypes, French students wear more formal clothes to school, with ironed shirts and barrets-hats for the girls, while the typical American children prefer jeans and T-shirts. However, the teachers did not find such stereotypes to be true at their schools: all children wore similar comfortable clothes and similar modern styles.

The teachers are interested in learning more about the creation of bilingual toys, since they are not familiar with such products, and find that toys can be an interesting artifact for their students.

---

### **Interview 3 with two children (Alex and Anita)**

**Student's Name: Alex, Ecole Bilingue**

**Age: 6**

**Languages spoken at home: English, Italian, French**

**Languages spoken at school English and French**

**Student's Name: Anita, Ecole Bilingue**

**Age: 6**

**Languages spoken at home: English and French**

**Languages spoken at school: English and French**

Anita comes from a French family that lives in the US. She speaks fluent French and English, and prefers to have the interview in French. Teodor speaks Italian with his mom and French with the rest of the people in his family. He prefers to have the interview in English. After I notice both of them understand English very well, I lead the interview in English.

Both Anita and Alex say that they have a favorite toy blanket that they have kept since their childhood. They can't think of any other toys they like, but both of them say that

they have a lot of toys. Alex likes to read books about Harry Potter, and he has very few French books. He does not play computer games. He watches a number of TV shows and movies, all of the in English: *Transformers*, *Armada*, *Kids next Door*, *Pokemon*, *Spiderman*, *The Mummy*. The only movie he remembers seeing in French is “Tintin,” a film he and Anita saw at school this year.

Anita likes to play computer games such as the Little Mermaid. Her favorite literature character is Martin, the heroine of a children’s series in France. Anita has the books in French and in English: she mentions that Maria does not speak English in the French book, but she is very good in English in the English book. She has seen a few TV shows in French when she visits her cousins in France. Her favorite French films are “Tintin” and “The Barba Papa.”

Both children are very animated when they start playing with the toy. Playing together, they appear less shy than the children that I interviewed individually. They press all the buttons and continue to press more buttons even after they have heard all sentences. They notice that they have to wait for one phrase to finish before they can press for the next phrase. Their friends gather around our table and Anita and Alex explain to them what the toy is about: a talking toy that speaks two languages. They seem happy and excited, and understand the meaning of the toy very well. Their peers ask me why the lady bug is so tall, and I show them the inside electronics of the toy. The parents that come up to pick up their children from the after-school program watch our play and smile when they understand the idea of the ladybug. Nina, who had her interview the previous day, stops by and presses the buttons on the lady bug with more confidence than she had the previous day. Some of the older children, students in second and third grade stop by to look at the toy. They ask me why they did not have a lady bug when they were in first grade—it looks like they are enjoying the idea.

---

#### **Interview 4: Boris, Ecole Bilingue**

**Age: 6**

**Languages spoken at home: English and French**

**Languages spoken at school: English and French**

Boris speaks French and English with his mom and English with his dad. He really enjoys constructors, and already has some experience in building electronic toys. His favorite game is Monopoly (in English). He has a few French books, and already knows how to read in both languages. His favorite movies are Star Wars and The Lion King. He likes seeing Disney movies in French. Boris and some of his peers that come to listen to our interview confirm that many DVDs made for children have French and English version: Disney, Harry Potter, Monsters Ink, etc.

Boris is more interested in the electronics and design of the toy and less interested in its speech. The way he understands it, the lady bug is now able to translate from one

language to the other, and if he records a sentence, he expects her to translate. He suggests that you should be able to talk to the toy, and she should be able to understand you and reply to you. I try to explain to him that voice recognition is not possible at this stage.

---

### **A brief intro to the French Cultural Center language program:**

Having done a few toy studies with first graders at Ecole Bilingue, I decided to schedule some additional interviews at the French Cultural Center in Boston. I had a few reasons for this decisions: first, in the French Cultural Center I had access to children and parents from bilingual families (the Director of the Bilingual School did not want to involve the parents in additional activities, so I was able to speak with a few of them briefly and only informally). Second, I expected to find a different age group and different language skills in the French Cultural Center. Both of these factors provided valuable insight and diversification to my toys studies.

---

### **French Cultural Center Observations, Family 1**

Parent's name for the interview: Mrs. and Mr. Goldberg

Children: Noa (4 and a half—study name Maria), Jonathan (6 year old—study name Alan), Dan (two and a half—study name Matthew)

Languages spoken at home: Hebrew, French, English

Languages spoken at school: English pre-school ( for the older boy), one a week French class

#### **PART I: INTERVIEW**

**How do the children learn and maintain two languages? What media artifacts play a role in their linguistic environment?**

“They serve chocolate éclairs to the children and they claim that they are providing “a French Experience.” Language lessons in French can be so snobbish and fashion-motivated,” says Mr. Golberg, a Frenchman himself, in criticism of some of the French programs for children in Boston. I am meeting with his family at the French Cultural Center in Boston, which is one of the few programs he values. He brings his family here every weekend so that his three children can maintain their skills in French.

Mr. Goldberg comes from France, and his wife Mrs. Goldberg comes from Israel. They have lived in France, Israel and they now live in the US. Their older children have lived with them in Israel and France, where they spoke the respective languages. At home, the family speaks together Hebrew most of the time, and French only occasionally. When in public and occasionally at home, the parents speak English with their children.

To Mr. Goldberg, who comes from France, it is very important to teach his children to speak his native languages, and he pursues the task with persistency and patience. Yet Maintaining French language in this family has not been easy in an English speaking environment. The children still make some basic mistakes in French: they use mixed phrases and mispronounce certain words. The family has hired a French-speaking baby sitter: the children understand her speech, but always respond in English and not in French. The children go to the weekly advanced French lessons at Ecole Bilingue. Mr. and Mrs. Goldberg find it generally difficult to acquire media materials in languages other than English. They receive TV5 channel at home, but this station is not oriented towards children: it has a lot of news shows and very few movies. When they are in France, they have tried to buy video tapes in French, but the European video system is not compatible with the American video machines. Occasionally, they get special arrangements and order tapes from Canada. Indeed, they have found that buying books that come with audio tapes with the same content. Mr. Goldberg has noticed that the children enjoy the books and the tapes, and are more willing to listen to French tapes if they already know the book and have discussed the characters with their parents.

Mr. Goldberg does not find that toys in the United States and in France are especially different: “It is the same commercial garbage.” His family does not have toys that are oriented towards language-learning, yet he find the idea intriguing. His wife adds that it is always difficult for her to find an activity that all of her three children, at their different ages, will enjoy and understand. For her, toys might be one way to start a game that everybody wants to play.

---

## **PART II: THE FAMILY’S VIEW ON THE TOY PROTOTYPES**

After the initial conversation, I show the lady bugs prototypes that I have made to the parents. Mrs. Goldberg, who herself a designer, really likes the visual design—she thinks the lady bugs are cute, and the colors—very enjoyable. She thinks this is a great idea, and is curious to see how her children will play with the toys. She has one design suggestion, though: she thinks that Lady Bug 1 has too many buttons, which will drive the kids to press them all at once and distract them from actually listening to the messages. She likes the design of the Yellow Lady Bug, which has a simpler interface, more suited to children in her opinion. I take note of her suggestion—this might be a good idea for Prototype 3.

---

## **PART III: TOY TESTING WITH FAMILY GOLDBERG**

### **(The red and the yellow lady bugs)**

While I speak with some of the parents at the French Cultural Center, the children of the Goldberg family rush in the room: they are back from their weekly Saturday French class. They are holding paper eggs colored in bright colors. They spot the lady bugs that I have left on the sofa, and the three of them kneel down and start pressing the buttons all at once. They are smiling and laughing, and visibly enjoying their dynamic play. Unfortunately, they do not understand how the Yellow Lady Bug works to record messages. I make a note to myself that the visual design itself needs to more make it clear that the toy can record and play sound: perhaps I can label the buttons with a short phrase. I notice that the children are not patient enough to press down the record button while they talk. The younger sister bends her face really close to the Lady Bug, and almost sticks her tongue in the speaker when she is recording. The parents are talking to each other at a distant corner of the room, and their “absence” might affect the children’s behavior. The little girl starts playing with the other toy before I ask her not to put her face so close to the lady bug when she records.

The first child to record something on the Yellow Lady Bug (provided with two sets of record + play buttons), sings a little melody with made-up words and plays it back. She seems really happy to hear her own voice singing. I guide their play by telling them that the Lady Bug wants to learn French, and they start recording short phrases in French. Each of them tries to teach the lady bug how to say “Bonjour!” They are not very patient and they forget to press and hold the record button, which makes the recording very short and inaccurate. Between the three of them, they speak English, but they record French greetings to the lady bug. The older brother overtakes the control of the lady bug. He urges his sister and his brother to say something while he records, and give them back their words. They are both a bit hesitant, and pause for a long time before they say a simple phrase: usually they record the “Bonjour” they started with. However, they keep pressing the buttons at random, and instead of hearing their own messages, they lead the system, by mistake, to reproduce the messages that other children recorded. “Hey, this is so cool,” exclaims Alan, the older boy, “I love hearing what other kids recorded! Let us see what they saying!”

Alan is extremely curious about how I have made the lady bug- a question that many children have asked me so far. He asks me many questions about the tools and materials I used for the making the toys and the special box that serves as their home.

In the meantime, his two siblings have been playing with the Red Lady Bug. First, they press some of the buttons, and smile and nod at each other when they hear the voice of the lady bug. They seem to press the French side wing as often as the English side. I can not judge if they establish the connection between the phrases on one side and on the other side (the phrases are translated in each language). Within the first minute of their play, they start testing some wild things on the wings: the press all the buttons at once with their palms, or each of them holds a few buttons while the other child presses some new buttons. Luckily, the lady bug box is sturdy and withstands the attack. The system is set up so that only one message can play a time. Their mother was right to point that

having fewer buttons with be easier for the children to operate and will allow them to focus: the many buttons are challenging to their attention focus, and in their turn, they become a challenge to the set up of the toy.

Their interest in the toy does not seem to diminish quickly. They press all the buttons of one toy, then play with the Yellow Lady Bug, then go back to the first lady bug and press some more buttons. I am curious to see if they will eventually get bored with the toy, or if they will engage in some fantasy play with the lady bug as an object (with or without its speech, which is indeed very limited). Our time for the toy study is too short for me to really test these two factors.

Mrs. Goldberg comes to pick up her children and take them home. I ask her what she will rather have one toy speak two languages, or have separate toys speaking each language. She is certain that her children will not play too much with the French toy, and she is glad that the toy invites them to listen to some French without making them feel lost (since there is English speech as well). I thank the family, and pack my toys.

---

## **French Cultural Center Observations, Family 2**

**Parent's name for the study: Helena Jones**

**Child's name for the study: Yvette Jones**

**Languages spoken at home: English (with mother and father) and French (with mother)**

**Languages spoken at school: English pre-school, once a week French class**

### **PART I: INTERVIEW**

**How do the children learn and maintain two languages? What media artifacts play a role in their linguistic environment?**

“She used to yell at me and get really angry when I talked to her in French after coming back to the US. Yet she spoke good French when we were in France. I think she finds it strange and “phony” that I speak to her in French if I am not a native speaker, and we are in the US. However, she likes to read so much that she does not mind it if we read books in French—this seems to be a ‘natural’ use of the language in her mind.” Yvette’s mother is American who has lived in Europe for a long time; she speaks fluent French. Yvette’s father was born in Africa, with French being his native language. He finds it too difficult and distracting to speak French to his daughter while he is in the US, and the mother in the family is the real driving force behind the family efforts to teach French to the child. This weekend, as usual, Yvette and her mother have come to the French Cultural Center for Yvette’s language lessons in the bilingual group. I interview the mother while Yvette is in her class; she chooses to speak English, which is more comfortable for both of us.

Yvette used to speak French when her family lived in France, but now that they live in the US, she is reluctant to use French. Sometimes she even gets furious when her mother speaks to her in French in the US: her mother though that Yvette finds it weird and “phony” to speak French in a non-French environment, and with a non-native speaker at that. She does not have many friends who speak French, and goes to an English language school. When asked about her language ability, she is modest and says that she does not speak French very well. Her mother tells me that Yvette is very self-conscious about her ability in French, and feels like she has forgotten so much that she no longer speaks very well. Her mother tries to install in her a sense of pride and confidence in her abilities: she talks to her about the value of speaking foreign languages as something that helps you communicate with more people, and live in a more interesting world.

Interestingly enough, Yvette does not mind listening to stories in French when her mom reads aloud to her; on the contrary: she really enjoyed it. Yvette and her mom both have a real passion for reading. They spend a lot of time reading together. Each week, they choose some books from the French library, so at least one in every eight stories the child listens to can be in French. They do not have a computer or a TV at home, so books and reading sessions are the major sources of French media for this family.

Yvette’s mother emphasizes the fact that her family does not have TV and computers at home: she does not believe these kinds of media can be very helpful to her daughter’s growth, or to the parents’ own leisure. The parents don’t see themselves as very technically inclined people, and they have past reading as their favorite activity to their daughter.

Yvette’s mother believes very strongly in the teaching of foreign languages. She is very sad that American school start teaching foreign languages very late in the program, which prevents children from speaking well, and causes Americans in general to be closed to the world. She believes that language is more than “just another class” at school: it is a window towards a new culture, and she is doing her personal best to share this view with her daughter.

---

## **PART II: THE FAMILY’S VIEW ON THE TOY PROTOTYPES**

Yvette’s mother really likes the design of the toy. Also, she thinks that such a toy can reinforce her child’s motivation to speak and learn French. “If I buy a toy that speaks two languages, I can show to my child in one more way that I value bilingualism. In general, I have found that spending time with her playing, reading, talking in both languages shows her that speaking these languages is important for me, and invites her to share my commitment.”

She likes that the toy has English and French sentences represented in the same object: she finds that this can help her daughter listen to both phrases and not get too confused by the French words she does not know yet. Right now Yvette does not have that many toys,

she prefers books, yet her mother would consider getting her an educational toy that is bilingual.

---

### **PART III: TOY TESTING (the red and the yellow lady bugs)**

Yvette comes back from her class, and sits on her mom's lap. Her mother asks her questions about the class in French, and Yvette responds in English. We show her the toys on the sofa—the red and yellow lady bug. We let her touch one of the buttons herself before we both explain what the toys are supposed to do. We tell Yvette that she can “teach” the lady bug how to speak French but pressing one of the buttons and recording a phrase. She does this willingly, and records a short greeting in French. She pushes more of the buttons on the red lady bug. She smiles when she hears both the French and English phrases: especially when the lady bug says that it is hungry. Her mom asked her what else she will teach to the toy, and Yvette goes back to the yellow lady bug and records the same phrase the lady bug used to say that it wants to eat some flowers, a phrase that she heard from the other lady bug. Her mom asks her if she wants a toy like this one at home—Yvette says yes, she would like this, and she would play with it often. She records a few more phrases and invites her mom to “say something” to the ladybug as well.

I note to myself that the loose structure of what can be recorded on the lady book provides a lot of freedom to families that want to experiment with language. However, I imagine that future prototypes will have to have some structure and suggested games build around the lady bug, which allow both children playing on their own and parents to follow some engaging educational activities.

The study is over, and Yvette and her mom go to the library to choose some new books in French.

---

## **French Cultural Center Family Observations, Family 3**

**Location:** The home of the family in Cambridge

**Name of the parents for the study:** Marielle Blanche

**Children:** 31/2 and 6 months

“As a French person living in the US, I always feel like there is a part of me that is missing no matter where I am. There is always a part of me that I can not translate. I feel natural when I am surrounded with other people that are bilingual and bicultural like myself,” says Marielle, one of the parents at the French Cultural Center that agreed to an interview.

I am interviewing Marielle at her house, and her two children, a three and a half year old daughter and her 6 months old son are both struggling for her attention as we talk. Her



little girl is curious and pushes the buttons on one of the toys: the sound comes out too loud and scares her, so she runs back to her mom. Marielle calms her down, we lower the sound and the little girl is not afraid of the toys anymore, and as I start talking with her mom, she pushes all the buttons of the talking lady bug many times, then plays with other toys and returns back to the ladybug.

Marielle prefers to lead the conversation in French.<sup>27</sup> The last time we met at the French Cultural Center in Boston, I asked her if she find that toys in the United States and in France are very different. She has been thinking about this in the past week. Yes, she says the whole childhood experience is different, the culture is different, and as far as the bilingual toys idea is concerned, she is not sure that it is necessary to have the two languages cramped into the same object. She added: “I find the experiences of French and English culture are separate, they should be experienced separately, and enjoyed once at a time. Live in France is something separate from life in the US, and I do not see how or why the two experiences can be combined.”

I remember that she told me in the beginning that a bi-cultural person like her always feels out of place. Then I remind that perhaps her daughters experience is different from hers. As adult immigrants, both of us have left something behind. Her young daughter is born in a world that integrates the two languages and part of the two language systems more seamlessly, without the feeling of displacement or nostalgia. She nods in agreement.

I ask Marielle how she would use the toy prototypes to play with her children. She says that she prefers to be responsive to what the child wants to do with a toy, and help out once the child has started playing with the toy. She said that she would ask her daughter what kinds of stories she wants to record on the toy, and then work with her daughter to do the stories. She speaks French to her daughter at all times, so she is certain that the activities will not be hard for her child. In her mind, recording new stories to the lady bug can be an extension of some of the reading activities they already are doing together. Her children have a lot of toys, but none that involve human voices or French language in particular.

I thank her for her insightful comments and let her and her children get some rest.

---

#### **French Cultural Center Observations, Family 4**

**Parent’s name for the study: Alexander Delecourt**

**Children: Nicholas (5 and a half years old) and Alexandre (two and a half years old)**

**Languages spoken at home: English (with mother) and French (with father)**

---

<sup>27</sup> All interviews lead in French will be presented as translated English text only

## **PART I: INTERVIEW**

### **How do the children learn and maintain two languages? What media artifacts play a role in their linguistic environment?**

“Children get confused by language mixing, and I am talking from experience,” says Mr. Delecourt, a Frenchman living in Boston who is the father of two boys attending the French Cultural Center bilingual classes. “I usually speak to the boys in French, it is my native language. I remember that a few years ago, when the children were younger, I would sometimes say a phrase in Franglais: something that uses both French and English words. Adults usually enjoy that code mixing if they speak both languages, but my children seemed really confused. This is why I am not sure that it is a good idea to put two languages at the same toy, like you have done.”<sup>28</sup>

Mr. Delecourt believes in introducing his children to French in a natural way, without strict reinforcements. In his view, children learn to speak the language of their environment naturally, and his role is to provide an environment that invites them to communicate in French. “I try to speak to the boys in French, and I don’t get upset when they reply in English, which they usually do. I am not forcing them in any way: I don’t want them to dislike French. I believe they will pick up the language naturally, and become confident step by step,” says Mr. Delecourt. He and his family speak to the children in French, and his wife, who speaks fluent French, speaks to them in English. He sometimes finds French video tapes from Canada, or plays DVD’s for them in French. The boys play some French CD Rom games, which they seem to understand and enjoy immensely: according to Mr. Delecourt, they understand the computer technology better than their parents.

---

## **PART II: THE FAMILY’S VIEW ON THE TOY PROTOTYPES**

Mr. Delecourt is a bit skeptical about the value that a toy can add to the children’s vocabulary, and he is not sure that the toy should include both languages at once. In his view, the best thing to invest in is spending more time with the child—and I can not but agree with him! He says that his sons like to play with action video games or with constructors like Lego: they are very active, they like to build things, and he is not sure they would like to play with a talking toy: they would quickly break it.

---

<sup>28</sup> I believe that in his observation, Mr. Delecourt is confusing two phenomenon: the mixing of words within the same sentence, which is common for young bilingual children, and code-switching, which is the ability to change from one language to the next without destroying the grammar structure of either language. The toy prototype I have made relies on code-switching, not on language mixing.

---

**PART III: TOY TESTING**  
**(the red and the yellow lady bugs)**

While we are leading our conversation his rambunctious 2 and a half year old is running around the room with one of the lady bugs in his hands. I happily note that even a small child can carry the toy, and use it to play. The child presses the buttons on the red lady bug, and seems to enjoy the really sound which comes out. The child is so young that it is hard to say whether he understands what the toy is saying. His older brother is not available for toy testing at the arranged date, so we end our toy study with the end of the interview.

## RELEVANT COMMERCIAL PRODUCTS

**Review of related language arts material toys involving voice interaction:****LITTLE LINGUIST**by *Neurosmith*<http://www.geniusbabies.com/littlelinguist.html>

Little Linguist is an interactive toy that allows children to learn another language the way they learned their first: by hearing a word, associating it with a familiar object, then beginning to use the word in sentences. It actually grows and changes with children by tracking their progress and adjusting its play -- increasing in difficulty for more experienced users, decreasing in difficulty for novices. Children love learning new words and the benefits of learning another language at a young age will last a lifetime.

**LEAP PAD**by *LeapFrog*<http://www.leapfrog.com>

The Leap Pad contains an electronic matrix board connected to a paper book and a pen. When the pen selects a part of the page, the board produces pre-recorded sounds connected to the image. It teaches ABC's, numbers, phonics, pre-reading skills, and pre-math skills. It plays educational games and song, and engages preschoolers with words, music, and sound effects.

**Diva Starz Interactive Dolls**

Mattel

<http://www.mattel.com>

The Diza Starz is an interactive talking doll that engages the child in short games and fashion activities (changing clothes and arranging new hair styles of the doll). Each doll has a selection of clothes with ID tags, which let the doll know what costume she is wearing.



**Bilingual Dolls**  
**Language Littles**

<http://www.languageittles.com>

This soft body doll has three buttons—each of the prompts the doll to pronounce a short phrase in English and in one more language (the doll is produced in French, Italian, Spanish, Hebrew and Chinese). The soft-body character can participate in the games of the child or teach it how to pronounce a few simple phrases. However, it has a very limited vocabulary, and it is marketed predominantly to children learning a foreign language in the United States, rather than representing a product for bilingual children in particular.



1. Ananny, Michael, Telling Tales: a New Way to Encourage Written Literacy Through Oral Language, M.S. Thesis, Program in Media Arts and Sciences, MIT, 2001.
2. Asakawa, Gil, and Rucker, Leland, *The Toy Book*, Alfred A. Knopf, New York, 1992.
3. Barthes, Roland, *Mythologies*, Editions du Seuil, 1957
4. Bers, M. U. and Cassell, J. (1998). "Interactive Storytelling Systems for Children: Using Technology to Explore Language and Identity." *Journal of Interactive Learning Research* 9(2) 183-215.
5. Bickmore, T. and Cassell, J. (2000). "How about this weather?' - Social Dialogue with Embodied Conversational Agents." Proceedings of the AAAI Fall Symposium on Socially Intelligent Agents. North Falmouth, MA, 2000.
6. Bickmore, T. and Cassell, J. (2001). "Relational Agents: A Model and Implementation of Building User Trust." ACM CHI 2001 Conference Proceedings, Seattle, Washington, 2001.
7. Bolker, Joan, *Writing Your Dissertation in Fifteen Minutes a Day*, Henry Holt and Company, 1998.
8. Brecht, Richard, and Ingold, Catherine, W, "Tapping a National Resource: Heritage Languages in the United States," SIL International, 2002, Available at: <http://www.cal.org/ericcll/digest/0202brecht.html>.
9. Cassell and Jenkins, *From Barbie to mortal combat: Gender and Computer Games*, MIT Press, 1998.
10. Cassell, J, Bickmore, T., Campbell, L., Vilhjalmsson, H., and Yan, H. (2001). "More Than Just a Pretty Face: Conversational Protocols and the Affordances of Embodiment." Knowledge Based Systems.
11. Cassell, J. "Embodied Conversation: Integrating Face and Gesture into Automatic Spoken Dialogue Systems." In Luperfoy (ed.), *Spoken Dialogue Systems*. Cambridge, MA: MIT Press.
12. Cassell, J. "Nudge Nudge Wink Wink: Elements of Face-to-Face Conversation for Embodied Conversational Agents", in Cassell, J. et al. (eds.), *Embodied Conversational Agents*. MIT Press, Cambridge, MA, 1999.
13. Cassell, J. (1998). "Storytelling as the Nexus of Change in the Relationship between Gender and Technology." In J. Cassell and H. Jenkins (eds.), *From Barbie to Mortal Kombat: Gender and Computer Games*. Cambridge, MA: MIT Press.
14. Cassell, J. (2000) "More than Just Another Pretty Face: Embodied Conversational Interface Agents." *Communications of the ACM* 43(4): 70-78.

15. Cassell, J. (2000). "More than Just Another Pretty Face: Embodied Conversational Interface Agents." *Communications of the ACM* 43(4): 70-78.
16. Cassell, J. and Bickmore, T. (2000) "External Manifestations of Trustworthiness in the Interface." *Communications of the ACM* 43(12):50-56.
17. Cassell, J. and Jenkins, H. (1998), *Barbie to Mortal Kombat: Gender and Computer Games*. Cambridge, MA: MIT Press.
18. Cassell, J. and Jenkins, H. (1998). *From Barbie to Mortal Kombat: Gender and Computer Games*. Cambridge, MA: MIT Press.
19. Cassell, J. and Ryokai, K. "Story Spaces: Interfaces for Children's Voices." ACM CHI 2000 Conference Proceedings, The Hague, The Netherlands, 2000.
20. Cassell, J. and Ryokai, K. (2001) "Making Space for Voice: Technologies to Support Children's Fantasy and Storytelling." *Personal Technologies* 5(3): 203-224.
21. Cassell, J. and Stone, M. (1999). "Living Hand to Mouth: Psychological Theories about Speech and Gesture in Interactive Dialogue Systems." AAAI 1999 Fall Symposium on Narrative Intelligence.
22. Cassell, J., and Stone, M. (2000) "Coordination and Context-Dependence in the Generation of Embodied Conversation." International Natural Language Generation Conference. June 12-16, Mitzpe Ramon, Israel.
23. Cassell, J., Bickmore, T. (2001) "Negotiated Collusion: Modeling Social Language and its Relationship Effects in Intelligent Agents" *User Modeling and Adaptive Interfaces*.
24. Cassell, J., Bickmore, T., Billinghurst, M., Campbell, L., Chang, K., Vilhjálmsón, H., Yan, H. (1999). "Embodiment in Conversational Interfaces: Rea", ACM CHI 99 Conference Proceedings, Pittsburgh, PA, 1999.
25. Cassell, J., Bickmore, T., Campbell, L., Vilhjálmsón, H., and Yan, H. "Conversation as a System Framework: Designing Embodied Conversational Agents", in Cassell, J. et al. (eds.), *Embodied Conversational Agents*. MIT Press, Cambridge, MA, 1999.
26. Cassell, J., Bickmore, T., Vilhjálmsón, H., and Yan, H. "More Than Just a Pretty Face: Affordances of Embodiment" in Proceedings of 2000 International Conference on Intelligent User Interfaces, New Orleans, Louisiana, 2000.
27. Cassell, J., Nakano, Y., Bickmore, T., Sidner, C., and Rich, C. (2001) "Non-verbal Cues for Discourse Structure." Association for Computational Linguistics Joint EACL - 2001 ACL Conference.
28. Cassell, J., Stocky, T., Bickmore, T., Gao, Y., Nakano, Y., Ryokai, K., Tversky, D., Vaucelle, C., Vilhjálmsón, H. (2002) "MACK: Media lab Autonomous Conversational Kiosk." *Proceedings of Imagina '02*. February 12-15, Monte Carlo.
29. Cassell, J., Vilhjálmsón, H., and Bickmore, T. "BEAT: the Behavior Expression Animation Toolkit" SIGGRAPH 2001 Conference.
30. Cassell, Sullivan, Prevost, Churchill, editors, *Embodied Conversational Agents*, MIT Press, 2000.
31. Center for Research on Education, Diversity & Excellence, January 2003

32. Cobb, Paul; Confrey Jere; diSessa, Andrea; Lehrer, Richard and Schauble, Leona, "Design Experiments in Educational Research," Web version of *Educational Researcher* (Vol. 32, No. 1), 2003.
33. Crawford, J., *Hold your tongue. Bilingualism and the politics of "English only."* Reading, MA, Addison-Wesley Publishing Company, 1992.
34. Druin, Allison, editor, *The Design of Children's Technology*, Morgan Kaufmann Publishers, Inc, 1999.
35. Druin, Allison; Benderson, Ben; Boltman, Angela; Miura, Adrian; Knotts-Callahan, Debby; Platt Mark, chapter 3, "Children as Our Technology Partners," *The Design of Children's Technology*, 1999 Morgan Kaufman Publishers, Inc.
36. Fleming, Dan, *Powerplay: Toys as Popular Culture*, Manchester University Press, Manchester and New York, 1996.
37. Georgetown studies in Romance linguistics, *Spanish in four continents : studies in language contact and bilingualism*, Washington, D.C., Georgetown University Press, c1995.
38. Grosjean, Francois, *Life with two languages*, Harvard University Press, Cambridge, Massachusetts and London, New England, 1982.
39. Goldstein, Jeffrey, editor, *Toys, Play and Child Development*, Cambridge University Press, 1994.
40. Harding and Riley, *The Bilingual Family: a Handbook for Parents*, Cambridge University Press, Cambridge, 1986.
41. Homel, Peter; Palij, Michael; Aaronson, Doris, editors, *Childhood Bilingualism: Aspects of Linguistic, Cognitive, and Social Development*, Lawrence Erlbaum Associates, Publishers, Hillsdale, New Jersey, London, 1987.
42. Hyltenstam & Opler, *Bilingualism Across the Lifespan*, Cambridge University Press, 1989.
43. Jenkins, Henry, editor, *The Children's Culture Reader*, New York University Press, New York and London, 1998.
44. Kelly, Anthony, "Research as Design," *Educational Researcher*, Vol. 32, No. 1.
45. Knoo, Rosemary, Kreher, Ursula and Wong, Ruth, editors, *Towards Global Multilingualism: European and Asian Models*, Multilingual Matters LTD, Clevedon, Philadelphia, Adelaide, 1994.
46. Kuznets, Lois Rostow, *When Toys Come Alive: Narratives of Animation, Metamorphosis, and, Development*, Yale University Press, New Haven and London, 1994
47. Laurie, S.S., *Lectures on Language and Linguistic Method in School*. Cambridge, Cambridge University Press, 1890, page 18.
48. Mackey, William, "The Description of Bilingualism," *The Bilingualism Reader*, Routledge, London and New York, 2000.
49. Muysken, Pieter, *Bilingual Speech : a typology of code-mixing*, Cambridge, UK ; New York : Cambridge University Press, 2000.
50. National Center for Educational Statistics, *English Literacy and Language Minorities in the US*, 2001.
51. Pavlenko, Aneta, "'In the world of tradition, I was unimagined': Negotiation of identities in cross-cultural autobiographies." *The International Journal of*



- Bilingualism*, Volume 5, Number 3, Sept. 2001, page 330, Kingston Press, London.
52. Palić, Micheal and Homel, Peter, "The Relationship of Bilingualism to Cognitive Development: Historical, Methodological and Theoretical Considerations," in *Childhood Bilingualism: Aspects of Linguistic, Cognitive and Social Development*, Lawrence Elbaum Associates, Publishers, 1987.
  53. Peal, e., and Lambert, W.E., (1962), The relation of bilingualism to intelligence. *Psychological Monographs*, 76, 1-23 (No. 546).
  54. Ryokai, K., Vaucelle, C., and Cassell, J. (2002) "Literacy Learning by Storytelling with a Virtual Peer." In Proceedings of Computer Support for Collaborative Learning 2002.
  55. Seiter, Ellen, *Sold Separately: Children and Parents in Consumer Culture*, Rutgers University Press, New Brunswick, New Jersey, 1993.
  56. Sommer, Doris, *Bilingual Games*, Palgrave Macmillan, 2002.
  57. Stocky, T. and Cassell, J. (2002) "Shared Reality: Spatial Intelligence in Intuitive User Interfaces." *Proceedings of Intelligent User Interfaces*. Jan 13-16, San Francisco, CA, pp. 224-225.
  58. Sutton-Smith, Brian, *Play and Learning*, Gardener Press Inc., New York, 1979.
  59. Sutton-Smith, Brian, *The Ambiguity of Play*, Harvard University Press, Cambridge, Massachusetts, London, England, 1997.
  60. Sutton-Smith, Brian, *Toys as Culture*, Gardener Press, Inc., New York, 1986.
  61. The Design-Based Research Collective, "Design-Based Research: An Emerging Paradigm for Educational Inquiry," *Educational Researcher*, Vol. 32, No. 1, pp 5-8, 2003.
  62. Umaschi Bers, Marina, *Soft Interfaces for Interactive Storytelling: Learning about Identity and Communication*, M.S. thesis, Program in Media Arts and Sciences, MIT, 1997.
  63. Vasques, Olga, "The magic of the La Clase Magica: enhancing the learning potential of bilingual children," *The Australian Journal of Language and Literacy*, Volume 17, Number 2, May 1994.
  64. Vygotsky, L. *Mind in Society*. Cambridge, MA: Harvard University Press, 1978.
  65. Vygotsky, L. *Thought and Language*, The MIT Press, Cambridge, Massachusetts, and London, England, 1986.
  66. Wei, Li, "The description of bilingualism," *The Bilingualism Reader*, Routledge, London and New York, 2000.
  67. Wei, Li, editor, *The Bilingualism Reader*, Routledge, London and New York, 2000.
  68. Williams, Booth Colomb, *The Craft of Research*, The University of Chicago Press, 1995.
  69. Zaritsky, Raul; Kelly, Anthony E.; Flowers, Woodie; Rogers, Everett; O'Neil, Patrick, "Clinical Design Sciences: A View From Sister Design Efforts," Web version of *Educational Researcher* (Vol. 32, No. 1), 2003.

