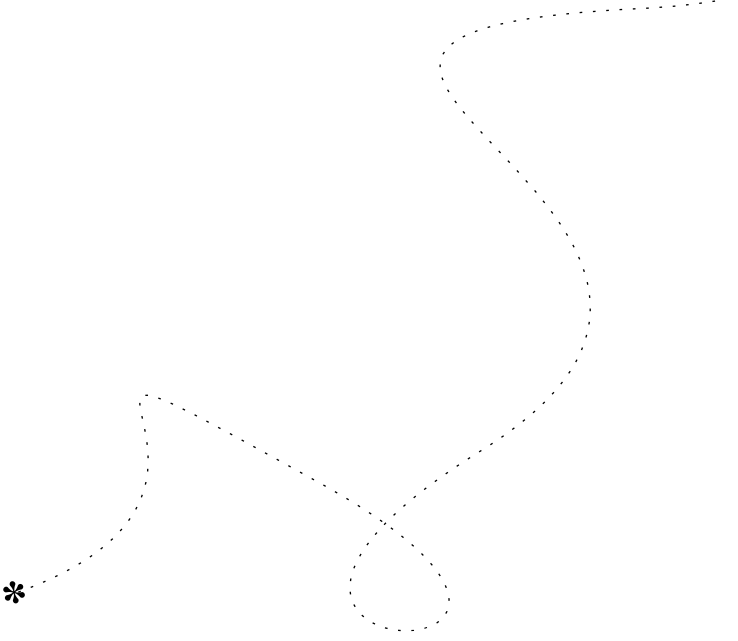

# forWordPlay:

**Experiential Learning of a Foreign Language via Interactive Play**

Karolina Novitska

This thesis is submitted in partial fulfillment of the requirements for the degree of Master of Arts in Design and approved by the MFA Design Review Board of the Massachusetts College of Art in Boston.

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**Jan Kubasiewicz**, Thesis Advisor
Coordinator of Graduate Program in Design
Dynamic Media Institute
Massachusetts College of Art, Boston

**Joe Quackenbush**
Assistant Professor of Design
Dynamic Media Institute
Massachusetts College of Art, Boston

**Brian Lucid**
Assistant Professor of Design
Dynamic Media Institute
Massachusetts College of Art, Boston

# Thank You…

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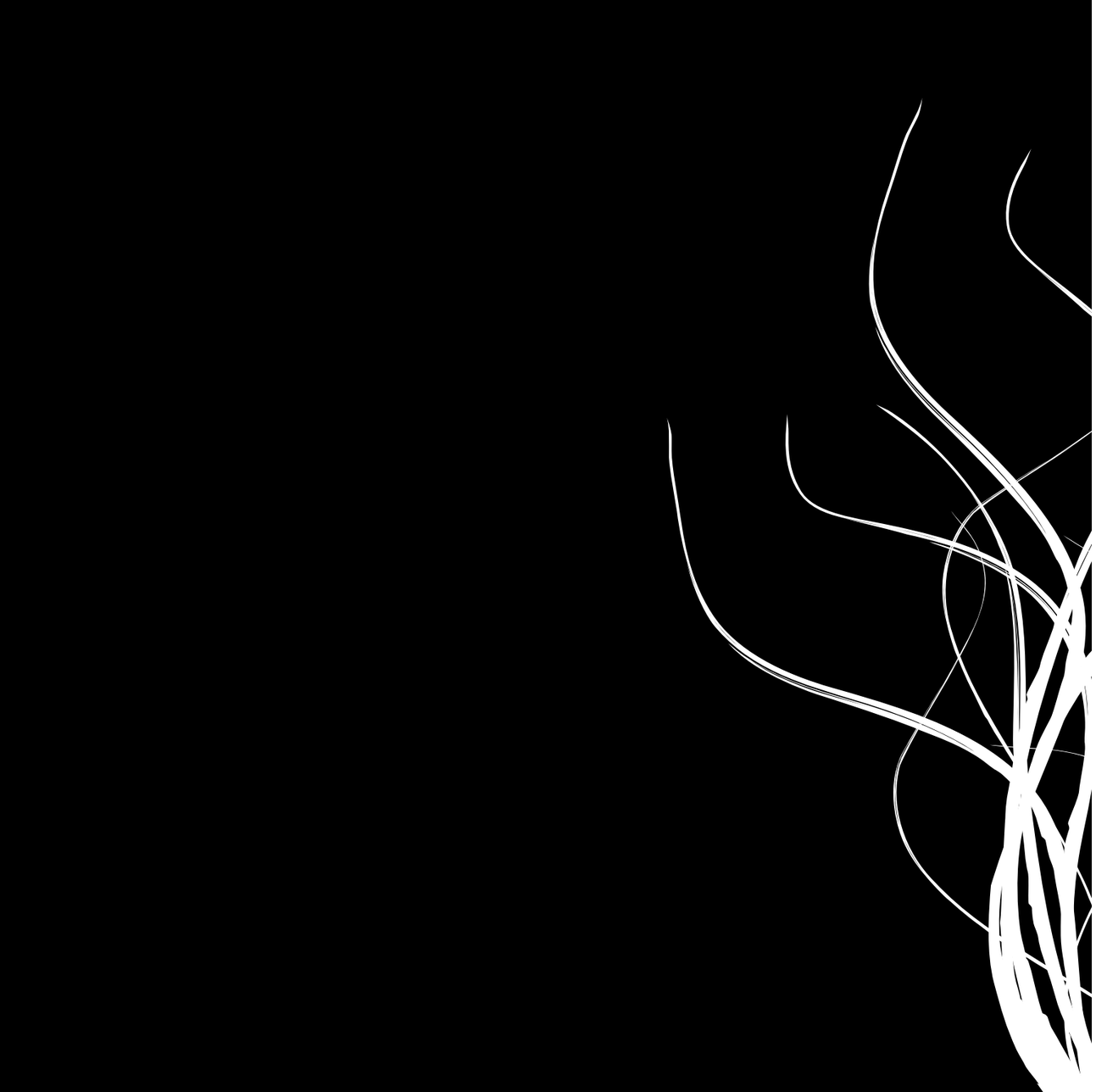
**Mom, Dad & Olga** for helping me stay sane through this unforgettable process.



## Abstract

My thesis research investigates how play can influence learning a foreign language and how the interactive medium can serve as a bridge between the actions of learning and playing.

As children we learn our first language through a very natural, playful, and exploratory process in which all our surroundings serve as stimuli for this process. However, as adults, we typically learn a foreign language in a much more systematic and reflective manner, applying our existing life experiences to contextualize the new language.

While the latter method can be valuable at advanced levels of language development, when we are ready to build and reflect upon our basic understanding of a foreign language, the difficult task of learning the primary building blocks of a new language can be more rewarding from a child's approach – learning through experimentation and play.

Playful, exploratory learning requires us to become active participants in the process rather than to passively receive information. Participatory learning can manifest itself in new media. Due to its modular, responsive and non-linear nature, new media allows content and curricula to be combined, remixed and customized in the most effective manner for each individual student. New media also allows infinite possibilities to surprise, engage minds, challenge perceptions, transcend time and geographic location, and to create a personal connection by appealing to our specific interests. I believe new media has a remarkable advantage to the analog world to provide an effective setting for these playful, exploratory learning experiences.

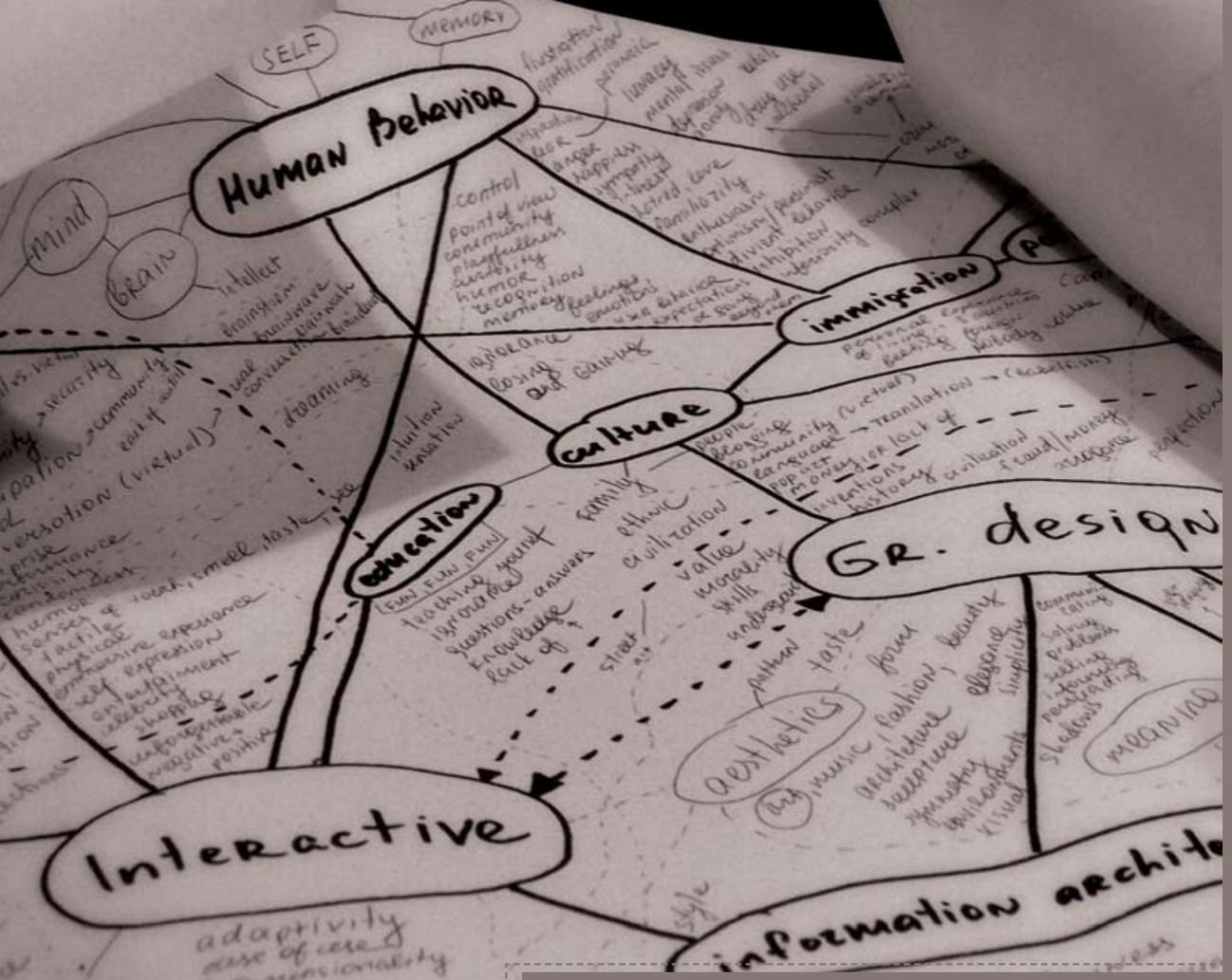
As a case study for my research, I have developed a range of prototypical modules for an interactive language learning system. My objective is to foster continuous exploration and stimulate participatory learning, while attempting to replicate the subconscious and relatively effortless learning we experience as children acquiring our first language.

# Table of Contents

People don't quit playing because they grow old.

They grow old because they quit playing.

- Oliver Wendell Holmes (1809 - 1894)




Preliminary Thesis Exploration : MindMap

# * Introduction

# 01

## Why Playful Learning?

Think about the moments when you are so engrossed by an experience that time seems to go by in a parallel universe, where the outside world is unnoticeable, where your mind and body, emotion and spirit persist in a harmonious state. Such an experience where you explore, create and manipulate your passions resonates deeply. This experience is retained in a way that even the most diligent study cannot provide. As an interactive designer, I am interested in creating opportunities for such experiences to occur.

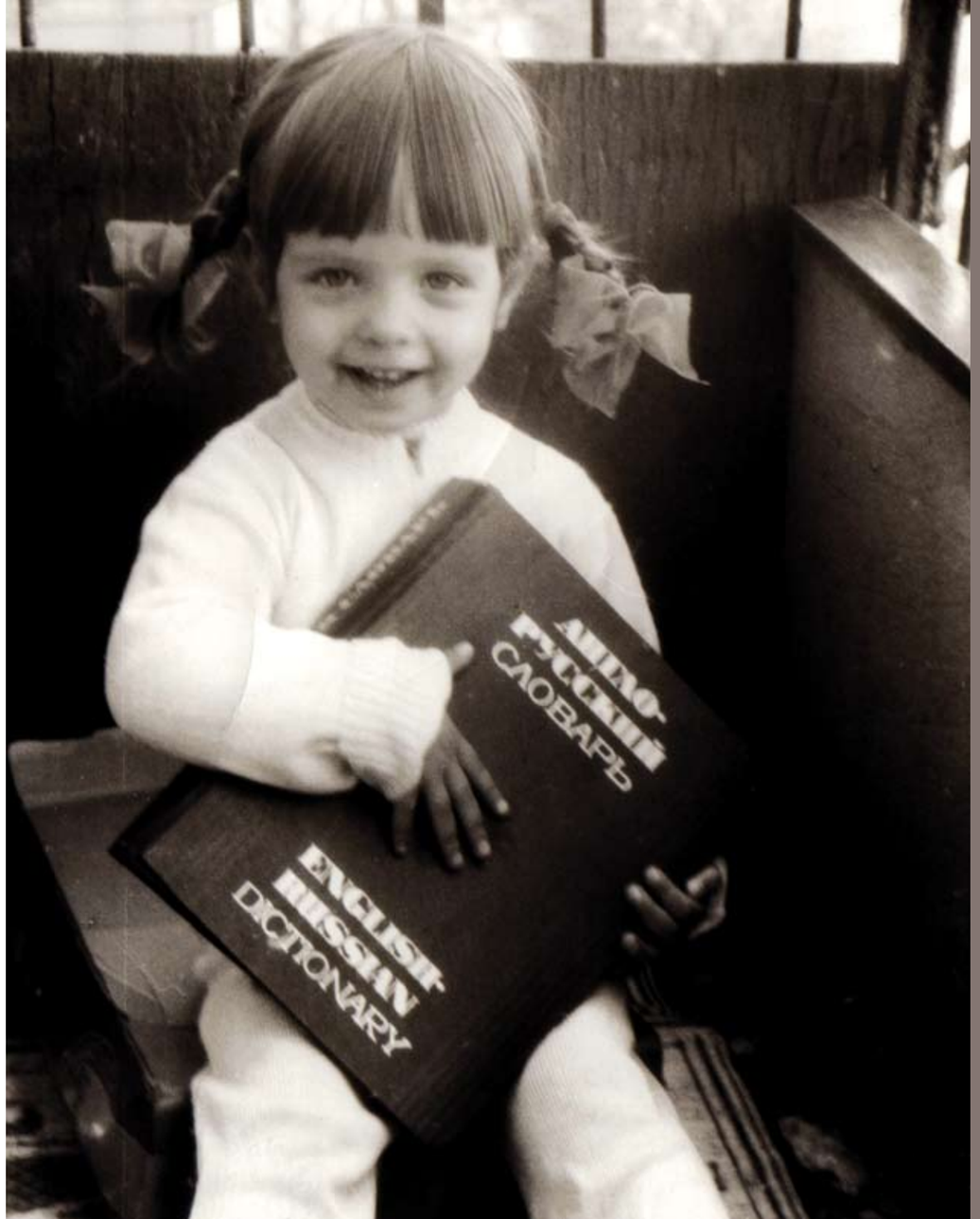
I find tremendous educational potential in the passionate tinkering we do while enjoying an activity. For me, such tinkering typically comes from the process of creating a new idea or solving a design problem. Despite the hard work, the process results in a learning experience that is very enjoyable and satisfying. Observing this response in myself, I became increasingly curious to find out how the process of tinkering affects our passion for learning. In a recent publication by a noted educational psychologist Lloyd Rieber, the author mentions his own quest for understanding this process, - "I have struggled over the years to define this kind of learning, but have settled on one simple word to describe it — play" **(Rieber, 2001)**.

What are the qualities of play that contribute to our gratification? The feeling of being one with yourself and the environment makes play a transcendent, almost meditative experience. It is pleasurable and enjoyable even if the person appears to be more serious than joyful while playing. What also makes play so inspiring is that it is a natural, spontaneous and unforced process.

**What is play?** According to a well-known child psychologist, Brian Sutton-Smith, we all know what playing feels like, but when we try to make theoretical statements about play, "we fall into silliness" **(Sutton-Smith, 1997)**. Theorists from various disciplines such as psychology, education, anthropology, and sociology, agree that a formal and accurate definition of play is difficult to achieve, but it typically falls in the following categories - play is usually voluntary; it is intrinsically motivating, that is, it is pleasurable for its own sake and is not dependent on external rewards; it involves some level of active, often physical, engagement; and it is distinct from other behavior by having a make-believe quality **(Blanchard & Cheska, 1984)**.

Unfortunately, play evokes a range of misconceptions as it is typically associated with child's play and is often considered the antithesis of seriousness, productivity, and work. In her book, "Work, Play & Type", Judith Provost suggests that to many people, play seems to be something you have to give up when you become an adult **(Provost, 1990)**. Another common belief about play is that it is easy. On the contrary, even as adults we engage in unusually challenging and difficult activities when we play, such as sports, music, hobbies, and games like chess, although we rarely use the word "play" to describe these activities **(Csikszentmihalyi, 1990)**.

Extensive research on play from various disciplines demonstrates that play is an important mediator for learning and socialization throughout life **(Blanchard & Cheska, 1985; Csikszentmihalyi, 1990; Provost, 1990)**. In fact, most of our earliest connections, associations and relationships with people as well as our environment came about via play.






For children, the process of play is their process of learning. A child's life is a world of adventure and imagination, laughter and silliness, explorations and experimentations, a world of play that seems remarkably complete and content. On the contrary, formal schooling followed by adult learning tends to involve much more task-oriented, curriculum constrained, didactic and systematic processes where we are fully conscious of our learning. Rieber notes that a person's interest in school learning rarely compares to the commitment that characterizes their learning outside of school **(Rieber, 2001)**.

Growing up in Ukraine, I have experienced both – the didactic schooling and the playful exploratory learning outside of school. One particular area of learning has paved a way for a specialization in my research – learning a foreign language. In attempting to learn English, I first tried the prepackaged methods available. It was a linear and plodding process of study, literally "by-the-book". When I arrived in America, I came to realize that my learning was ineffective. The books and coursework that I studied were comprised of vocabulary words and phrases that seemed out of context. Abstract concepts of English grammar played a prominent role. Without context and practice, the learning process was passive, unproductive, and frustrating. It was also misguided. Only through later concrete experiences with native English speakers was I able to apply the textbook knowledge and learn to successfully communicate in a new language. I needed to be interactive with my learning in order to assimilate knowledge of something dynamic such as a foreign language.

These personal conflicts have instigated the objectives in my thesis work - to bring playfulness and the experiential qualities into the process of learning a foreign language. I want to engage learners, to break their expectations, to evoke their curiosity needed for continuous exploration, to help them develop a passion for discovering new and exciting information and to construct knowledge, to enrich their experience, and, through all these elements, to promote their learning.

In determining the optimum methodology for such an undertaking, I look for a starting point at David Kolb and John Dewey's description of the experiential approach to learning. The experiential approach stresses the relationship between concrete experience, reflection, concepts, and application **(Egenfeldt-Nielsen, 2005)**. A key characteristic of experiential learning theory is that the starting point of learning is a concrete experience that helps learners to construct their own knowledge through reflection upon this experience. My goal as an interactive designer is to investigate how the digital medium can provide such concrete experiences that can be reflected, conceptualized and applied continuously.

Digital media presents novel opportunities for creating such an experience. According to Dewey, experience is the interaction between humans and their environment. Experience can include thinking, feeling, seeing, handling and doing **(Dewey, 1910)**. Experiences exist in both the digital and the analog realms. If we were to imagine what Dewey's statement could imply in regard to the digital medium, there appears to be an enormity of potential. The first characteristic of new media, as described by Lev Manovich, is numerical representation. It is through numerical algorithms that we are



able to create a set of rules and a synthetic environment that users can interact with. Users interpret this digital universe and the rules associated with it. Through interpretation, users can come to understand the information the environment contains and use it to construct new knowledge. This "knowledge is constructed as a result of the [user's] active transformation of information attaching it to previous experiences and concepts" **(Egenfeldt-Nielsen, 2005)**.

The next characteristic of new media that would lend itself to our construction of an experience is its interactive nature. Users are able to have concrete experiences by manipulating and interacting with the digital environment. In a classroom setting, students are typically told about the interactions and the experiences of others. While they can think about and reflect upon them, students lack the richness of a personal experience. Unlike the traditional classroom or textbook approach in which the right answers are given to you, an exploratory digital environment would allow students to construct answers based on their own experiences interacting with the system. Interactive experiences build concepts through actions, providing a richer contextualizing of educational material.

The richness of context is also supported by the multi-modular nature of the digital medium. Research shows that combining different representation forms (auditory, visual and textual) results in better learning outcomes, particularly if we present these forms in such a way that they supplement and support each other **(Egenfeldt-Nielsen, 2005)**. The convergence of the representational forms in new media has proven to be an especially successful learning tool for students with little prior knowledge of a topic **(Mayer & Moreno, 1999)**. Successful integration of various multi-sensory modalities in the digital medium also allows the support of multiple intelligences and multiple learning styles.

A user's experience with digital or new media can be tailored based on their needs. Users can independently choose to access the system in a non-linear way. Alternatively, a digital system can observe the users' behavior and guide them in the right direction. It can advance them within the environment and reward correct answers, or it can present the information in a different way if the user fails to grasp a concept.

In a successful digital learning environment, the user is drawn into the experience, losing their sense of time and place. Such an environment demands the user's full concentration, focus and energy. The user is deeply invested in the learning experience. So the question is: how can we motivate a person to participate or play with the system?

While there are many elements that can motivate someone to participate in a digital learning environment, educational theorists Thomas Malone and Mark Lepper were able to distinguish five major categories: challenges; curiosity; control; fantasy; and interpersonal motivations. Challenges refer to the goals, levels of difficulty, puzzles, and surprises. Curiosity is the desire to discover a new environment with one's senses and to learn its rules and behaviors on a cognitive level. Control refers to the freedom of movement within the dynamic environment as well as the user's ability to affect the narrative scenarios and manipulate the system. Fantasy is the appeal of a virtual or fictional environment that provides

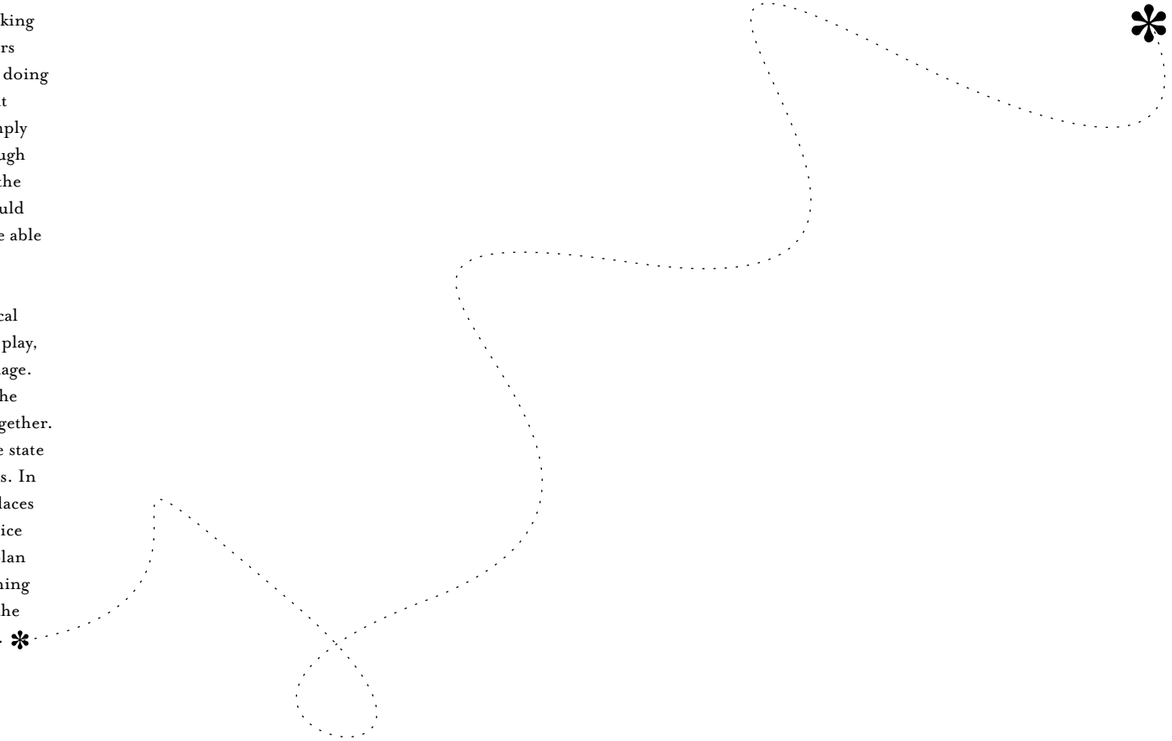
experiences otherwise unsafe or impossible. The interpersonal motivators that Malone and Lepper mention refer to the social context of a digital environment involving play, competition, and collaboration with peers **(Malone & Lepper, 1987)**.

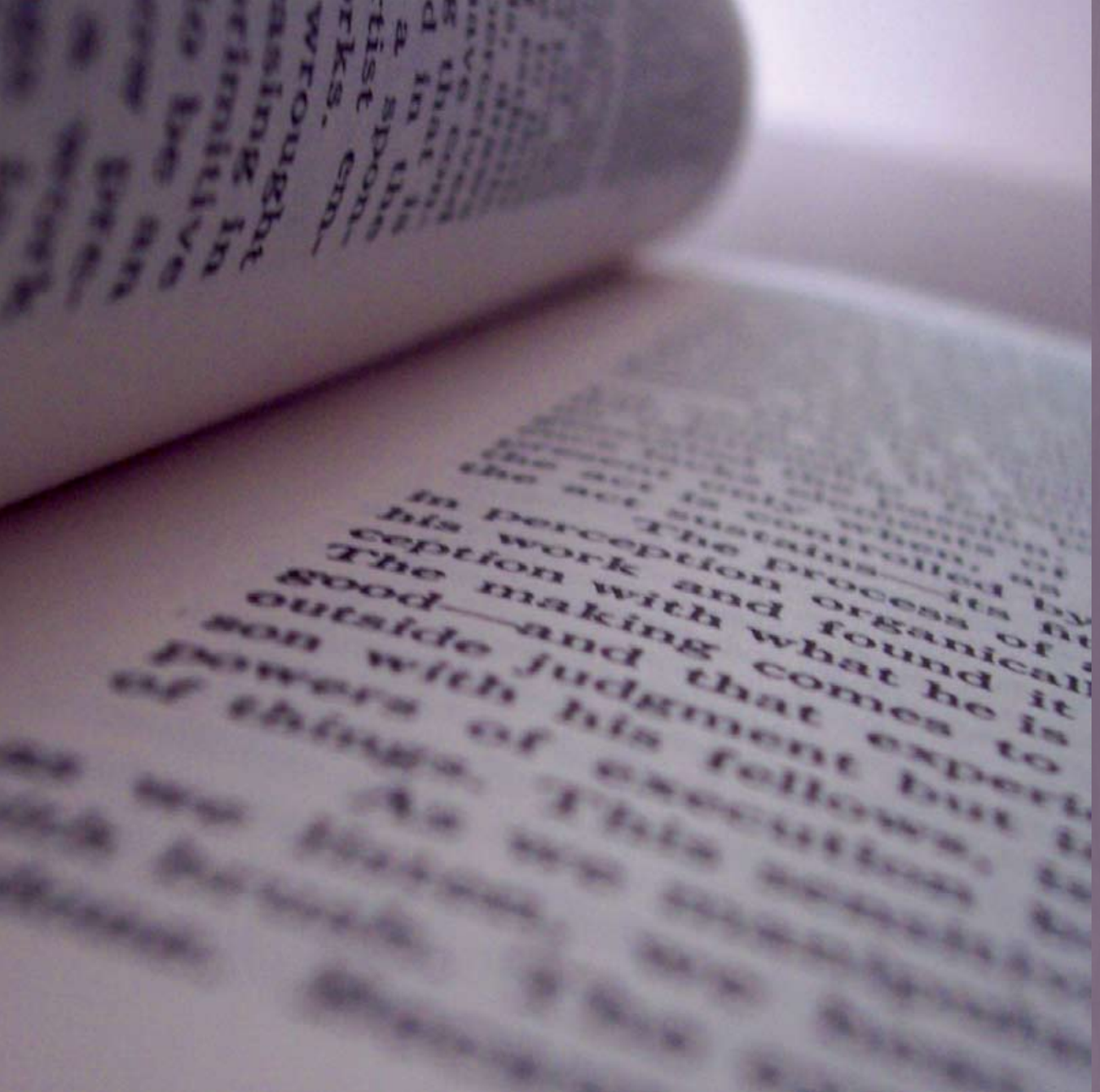
A simple scenario can demonstrate how these principles contribute to user motivation. Let us imagine a student who wishes to learn about a particular event in 18th century England. A specifically designed digital environment would enable her to defy the laws of physics and virtually travel to that particular moment in history. Rather than reading a textbook that describes the event, the student is able to experience a simulated event firsthand. What is intriguing to me is that the control over learning shifts from the teacher (in a traditional classroom) to the student (in a digital system). By providing the student with a richer context, she becomes more involved with the material, learning in an active and engaging way.

The enjoyment that one would get out of such a digital environment is a motivator in and of itself. Like play, experiences in a new media environment can be intrinsically rewarding. While "edutainment" is an attempt at a unique combination of technology, education, and entertainment, the majority of "edutainment", titles that are currently on the market simply sugarcoat learning with entertainment so it becomes more palatable **(Resnick, 2004)**. I aim to realize a type of learning that is analogous to play. People would then be motivated to learn in the same way they are motivated to have fun.

Intrinsic motivation is a necessary ingredient for play and for learning. If people do not want to play, they will not play. They would simply be going through the motions and taking whatever actions were required by the rules. Many readers have at one time or another realized that their eyes were doing all the mechanical movements involved with reading, but no reading was actually taking place. Their eyes were simply scanning over text while their mind was elsewhere. Though there are perhaps those who would not be interested in the concept of a playful learning system, I trust that they would understand the desire to enjoy learning and therefore be able to appreciate the potential in my thesis work.

In the first part of my thesis I will investigate the historical and contextual issues associated with the intersection of play, interactivity and experiential learning of a foreign language. My goal is to build a framework that can bring some of the many pieces of interactivity and experiential learning together. The second part of my thesis will review and evaluate the state of the art of the current digital language learning systems. In the third section I present a substantial case study that places the theoretical elements discussed in part one into practice via a series of prototypical modules that in the future I plan to integrate into a full-fledged interactive language learning system. Following the case study, I include a section on the conclusions and theories that evolve from the case study.





* Theoretical Research

# 02

The theoretical foundation behind this thesis is primarily grounded within the constructivist learning theory. I also attempt to connect the pedagogical aspects of this theory to existing second language acquisition research, and then bridge these ideas towards new media in order to support the assumptions that arise from my case study. An interactive learning environment provides a suitable context to maintain constructivist principles; learners playfully explore the educational material in a way that is self-motivated, interactive and experiential.

## CONSTRUCTIVIST THEORY OF LEARNING

As a philosophy of learning, constructivism is founded on the premise that by reflecting on our experiences we construct our understanding and knowledge. It views learning as a search for our own meaning rather than memorization of factoids and regurgitation of the meaning of others. One of the most influential ideas of constructivist learning theory is the emphasis on the learner as an important and active agent in the learning process. Learning is affected by the context and the attitudes of the learner. In the constructivist approach, learners have more latitude in becoming effective problem solvers, identifying and evaluating problems, as well as deciphering ways in which to transfer their learning to these problems.

Burrhus Frederic Skinner

Steven Krashen

Jean Piaget

Noam Chomsky



# Key figures

## KEY FIGURES IN CONSTRUCTIVIST THEORY

The theories of John Dewey, Jean Piaget, and Jerome Bruner among others had a tremendous impact on our thinking about the nature of learning and subsequently - teaching. For Dewey, knowledge emerged only from situations where learners drew it out of experiences that carried a personal meaning to them. "Knowing consists of operations that give experienced objects a form in which the relations, upon which the onward course of events depends, are securely experienced" **(Dewey, 1929)**. Dewey expanded on the notion that all knowledge is constructed by the learner by including the idea that there is a relationship between the individual, the community, and the world mediated by socially constructed ideas **(Oxford, 1997)**. Dewey believed that knowledge construction is enhanced by social interaction.

Another proponent of the constructivist approach to learning was Jean Piaget. The basis of learning for Piaget was discovery: "To understand is to discover, or reconstruct by rediscovery, and such conditions must be compiled with if in the future individuals are to be formed who are capable of production and creativity and not simply repetition" **(Piaget, 1973)**. Piaget supported an educational system that matched the curriculum to the learner's particular stage of development. Understanding then builds step by step through active participation and involvement.

Learning by discovery is a fundamental constructivist principle that is extended in the work of an American psychologist - Jerome Bruner. A major focus in his theoretical framework revolved around the idea that learning is an active

process of inquiry and discovery in which learners construct new ideas or concepts based upon their current and past knowledge. Rather than relying on teachers, they solve problems by interacting with a learning environment, testing hypotheses and then developing generalizations. Based on his theory, learning environments must provide experiences, in which students are able to question, explore and experiment. An important aspect of discovery learning is inductive reasoning, which is formulating general principles based on knowledge of examples and details. According to Bruner, a discovery learning environment should present information and examples where students manipulate the information and examples until they discover the interrelationships.

Inductive approaches to learning require intuitive thinking. In a learning environment that promotes discovery, learners make guesses based on incomplete evidence and then confirm or disprove these guesses, reformulating their ideas about the targeted subject of learning. A general principle derived from Piaget's theory is that errors and uncertainties, which occur when learners are confronting new knowledge, are a natural and important part of the learning process **(Reagan, 1999)**.

### EXPERIENTIAL LEARNING THEORY

Dewey's hope was to realign education so that it becomes more relevant to the students by drawing from their life experiences and using their natural curiosity for exploring the surroundings. Dewey views learning as a "dialectic process integrating experience, concepts, observations, and action" **(Dewey, 1938)**. He describes learning as a cycle where the impulse of experience gives ideas their moving force, and ideas give direction to impulse. By delaying an immediate reaction and observing the situation and then reacting – we achieve purpose. It is through these processes that sophisticated, mature purpose develops from blind impulse. Dewey stresses that experiences should not be thought of as separate, but rather existing as a continuum. In teaching, Dewey points out, it is important to bridge the gap between an educational experience and a student's life experiences while promoting future capacity for learning and awareness for additional educational experience **(Dewey, 1938)**

### KURT LEWIN'S PERSPECTIVE

Kurt Lewin is the founder of American social psychology whose principle focus of study is the integration of theory and practice in learning. According to Lewin, similar to Dewey's perspective, learning is maximized when there is a dialectic tension between the immediate, concrete experience and analytic detachment. Lewin emphasizes the importance of the "here-and-now" concrete experience to validate and test abstract concepts. "Immediate personal experience is the focal point for learning, giving life, texture, and subjective personal meaning to abstract concepts and at the same time providing a concrete, publicly shared reference point for testing the implications and validity of ideas created during the learning process" **(Kolb, 1984)**.
Lewin's model of experiential learning - "Action Research and Laboratory Training" - is based on the concept of feedback which provides the basis for a continuous process of goal-directed action and evaluation of the consequences of that action **(Kolb, 1984)**.





To reflect on Lewin's model, in a context of a digital, experiential learning environment, various meticulously designed algorithms can provide "adequate feedback" as a continuous response to user interactions and experiences. Such feedback, as described by Lewin, should be an integral part of an effective learning process.

### DAVID KOLB'S MODEL OF EXPERIENTIAL LEARNING

Influenced by the contributions of Dewey, Lewin and Piaget, David Kolb constructs his own model of experiential education. In his 1984 book, "Experiential Learning", he describes six major characteristics of the experiential learning theory.

**01. Learning is best conceived as a process and feedback, not in terms of outcomes.** To improve learning in higher education, the primary focus should be on engaging students in a process that best enhances their learning – a process that includes feedback on the effectiveness of their learning efforts. With this characteristic, Kolb challenges the idea of "education as banking", first described by Paulo Friere, in which students are the depositories and the teacher is the depositor of information who focuses on measuring the return of investment from these deposits. "Instead of communicating, the teacher issues communiqués and makes deposits which the students patiently receive, memorize, and repeat" **(Friere, 1966)**. Friere points out that without continuous inquiry, without practice, students become collectors or catalogues of information. Instead, knowledge emerges only through invention and reinvention, through the restless, impatient, continuing, hopeful inquiry men pursue in the world, with the world, and with each other **(Friere, 1974)**.

**02. All learning is relearning.** Learning is best facilitated by a process that draws out the students' beliefs and ideas about a topic so that they can be examined, tested and integrated with new, more refined ideas. Kolb points out that when we teach, we should not only implant new ideas but also modify old ones. "If the education process begins by bringing out the learner's beliefs and theories, examining and testing them, and then integrating the new, more refined ideas into the person's belief system, the learning process will be facilitated" **(Kolb, 1984)**.

**03. Learning requires the resolution of conflicts between dialectically opposed modes of adaptation to the world.** Conflict, differences, and disagreement are what drive the learning process. In learning, one is called upon to move back and forth between opposing modes of reflection and action and feeling and thinking. "Learning requires abilities that are polar opposites, and the learner, as a result, must continually choose which set of learning abilities he or she will bring to bear in any specific learning situations" **(Kolb, 1984)**.

**04. Learning is a holistic process of adaptation to the world.** Learning is not just the result of cognition but involves the integrated functioning of the total person - thinking, feeling, perceiving and behaving. The concept of learning is significantly broader than what is typically associated with a school classroom. Learning occurs in all human settings, experienced in all life stages, encompassing concepts such as creativity, problem solving, decision making and attitude changes. Learning is seen as a process of holistic integration of all human functions.

**05. Learning results from synergetic transactions between the person and the environment.** In Piaget's terms, learning occurs through balanced collaboration of the dialectic processes of assimilating new experiences into existing concepts and accommodating existing concepts to new experience.

**06. Learning is the process of creating knowledge.** Experiential Learning theory proposes a constructivist theory of learning whereby social knowledge is created and recreated in the personal knowledge of the learner. This stands in contrast to the "transmission" model on which much current educational practice is based where pre-existing fixed ideas are transmitted to the learner.

From the perspective of experiential learning, Kolb defines learning as a "process whereby knowledge is created through the transformation of experience" **(Kolb, 1984)**. This definition emphasizes learning as the process of transformation as opposed to content or outcomes. Secondly, Kolb stresses that knowledge is continuously created and recreated and is not an independent entity to be acquired or transmitted.

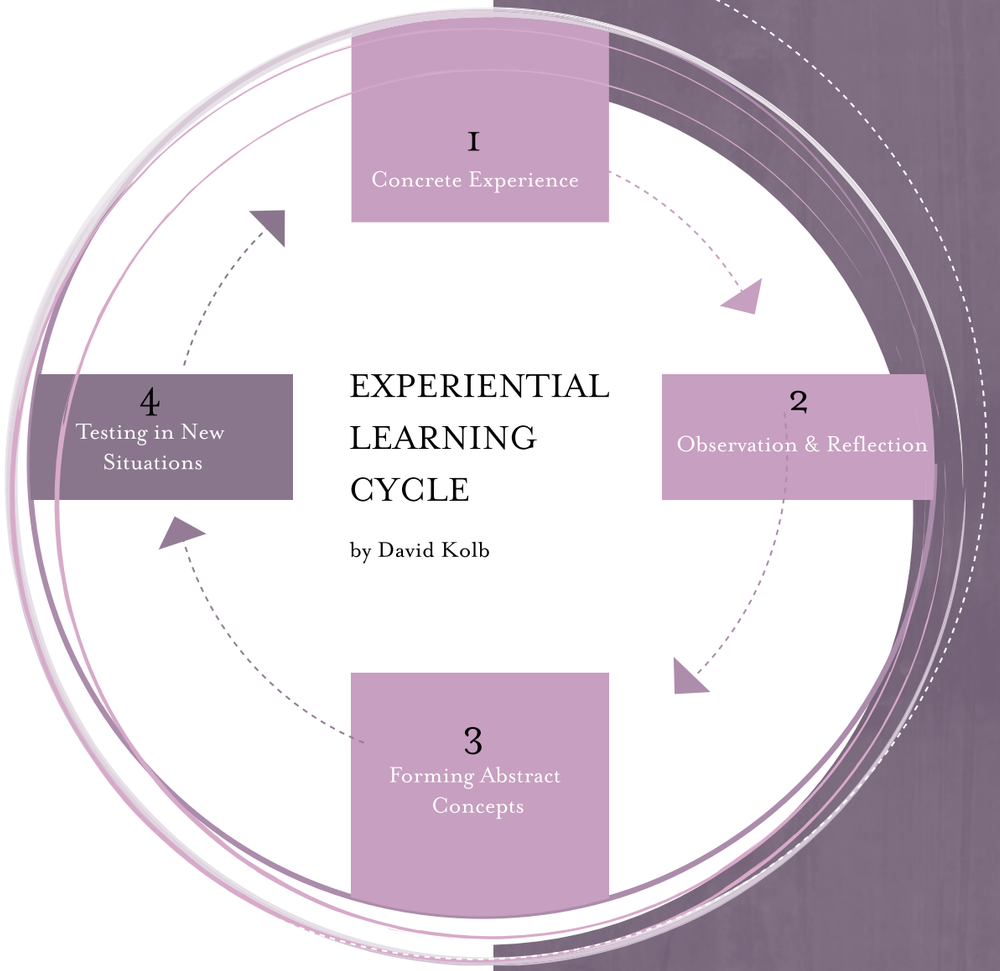
### KOLB'S EXPERIENTIAL LEARNING CYCLE

Kolb's theory revolves around a four-staged experiential learning cycle which historically has roots in similar models by Dewey and Lewin and presents the sequential and continuous flow in learning experiences. Concrete experience is that starting point of the learning process, and serves as the basis for the observations and reflections which then transform experiences into abstract concepts inspiring new forms of actions. The experiences from new actions are then tested and reflected constructing new concrete experiences. The cyclical process is then repeated. "You will never completely grasp a given area or experience, but continuously explore, closing in on it in a hermeneutic process" **(Kolb & Kolb, 2005)**.

### A CONSTRUCTIVIST APPROACH TO LANGUAGE LEARNING

Language learning has often be described as one of the most impressive mental operations of the human mind in view of the complexity of grammatical structures, the size of the mental lexicon, and multiple functionality, learners of any language are confronted with **(Branscombe, Goswami & Schwarz, 1992)**. A range of language acquisition theories influenced numerous approaches to language learning and teaching.

In the 1950's, various linguists sought to capture the nature of language development through Skinner's vision of Behaviorism. The dominating principle of behaviorism holds that language acquisition is the result of a set of habits. This theory claims that language acquirers receive linguistic input from speakers in their environment and learn from positive reinforcement for their correct repetitions and imitations. The behaviorist method emphasized habit formation, repetitive drills, avoidance of errors, mimicry and memorization **(Stern, 1983)** and depended on a central and active role for the teacher **(Richards & Rodgers, 1986)**. The behavioral view dominated foreign language teaching methodology for several decades resulting in classroom emphasis of controlled practice with careful reinforcement **(Brown, 1980)**.



These claims are heavily criticized by other linguists and psychology theorists. The most successful and damaging critic to the behaviorist theory is Noam Chomsky. In his "A Review of B.F. Skinner's Verbal Behavior" Chomsky rejects behaviorist philosophy primarily for the theory's dismissal of the internal experiential and procedural influences in language development, in other words, ignoring the role of the actual speaker in language acquisition. Chomsky asserts that behaviorist models cannot explain various facts about language acquisition, such as the rapid acquisition of language by young children. Chomsky also argued the behaviorist belief that language learning depends on the application of reinforcement. For instance, by the age of four or five most children have an almost limitless capacity to understand and produce sentences which they have never heard before. "Skinner's claim that all verbal behavior is acquired and maintained in "strength" through reinforcement is quite empty, because his notion of reinforcement has no clear content, functioning only as a cover term for any factor, detectable or not, related to acquisition or maintenance of verbal behavior" **(Chomsky, 1959)**.

In a language classroom, following the Behaviorist views, the teacher describes linguistic content and attempts to transfer that knowledge to the student. To verify that knowledge has been transferred, the teacher asks students to provide a regurgitated account of this knowledge. The teacher would determine all of the skills needed and ensure that students learned them all in a step-by-step manner **(Roblyer, Edwards & Havriluk, 1997)**.

The limitations of such an approach became apparent since problem solving and strategy learning were dismissed in behavioral learning. Consequently, cognitive approaches emerged which focused on building a learner's experiences and providing challenging learning tasks which could function as "intellectual scaffolding" to help students learn and advance through the different stages of the curriculum **(Roblyer, Edwards & Havriluk, 1997)**. The cognitive approach goes somewhat beyond Behaviorism because it does not propose the pure learning of facts and skills, but adds a cognitive aspect to the learning process. The fundamental reason why purely cognitive approach is heavily criticized is the fact that explicit teaching and instruction are still very much part of this theory. Cognitive Theory became a bridge from Behaviorist to Constructivist thought in Second Language Acquisition (SLA) research and methodology.

Constructivist pedagogy perceives students as active learners who approach language learning already holding ideas which they use to make sense of everyday experiences. In this process learners actively make sense of the new language by constructing meaning. Constructivists go beyond the pure cognitive thinking by proposing "to help learners to construct meaningful and conceptually functional representation of the external world" **(Jonassen, 1991)**.

The communicative approach in SLA replicates constructivist ideas which indicate that knowledge is something that cannot be transferred. Instead, it must be constructed by the learner, building on already existing knowledge with the help of others through interaction. Moreover, social interaction produces linguistic input and output necessary for the acquisition of a second language. SLA research suggests that mere training in structural (grammatical) and vocabulary knowledge will not result in real linguistic competence and language proficiency. Following the constructivist approach, language learning as well as learning in general should be described as an interactive, dynamic process, in which new knowledge is most fruitfully acquired when learners are placed in a situation where they can explore sources and resources rather than in a context of mere formal instruction **(O'Murchu & Sorensen, 2004)**.




Constructivist philosophy allows for play and exploration, providing multiple perspectives of a targeted linguistic content. What type of a learning environment would support these principles? As Macromedia's Vice President of online entertainment - Fabrice Florin suggests, a rich and rewarding learning environment can emerge from the creation of "information landscapes, virtual towns, or intellectual amusement parks" - an intriguing metaphor for the learning material for the future **(Florin, 1990)**.

## A CONSTRUCTIVIST APPROACH TO DIGITAL LEARNING ENVIRONMENTS

A constructivist view of learning suggests an approach to teaching that gives learners the opportunity for concrete, contextually meaningful experience through which they can search for patterns, raise their own questions, and construct their own models, concepts, and strategies. The focus of the concrete experience as a starting point for learning becomes as important when we view it in a context of a playful digital learning environment. In such an environment, users can be engaged in the interaction with the elements of integrated form and content. Such interaction can result in a concrete experience which starts the learning cycle as described in the experiential learning theory.

In a digital multimedia environment, it is possible to simulate a real life situation providing an opportunity for students to experience it firsthand. Oftentimes, in a traditional classroom, teachers rely on the students reading or hearing about a particular topic represented by abstract information without a connection to a real experience. While reading and hearing are important teaching tools, we can achieve better understanding of the material through a concrete experience **(Egenfeldt-Nielsen, 2005)**. Drawing from Dewey, since learning is a search for meaning, learning objectives should be established that connect to issues important and relevant to the student.

In a digital learning environment, we can provide relevant concrete experiences where abstract concepts are applied continuously and tested against real or fictional situations. As an example, imagine learning about emotions expressed in a foreign language. We could read a textbook chapter on emotions, memorizing vocabulary words and their uses in complete sentences, but essentially, we do not get to the core of emotions unless we have a concrete experience relevant to the topic. In a digital environment it would be possible to construct such an experience.

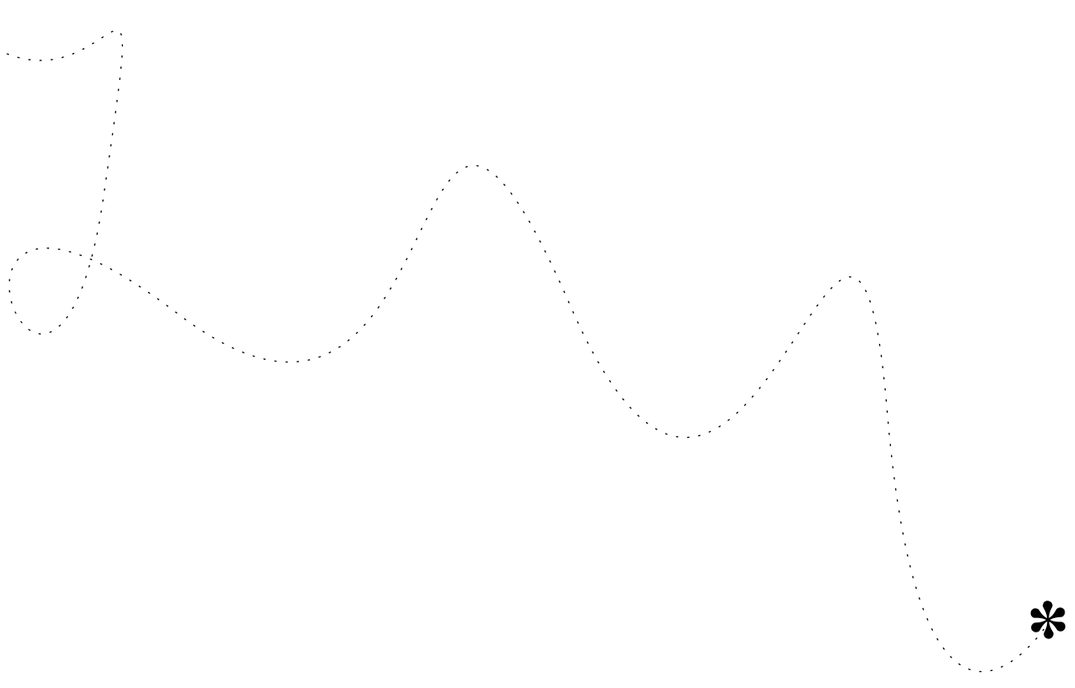
One case could include a dynamic presentation of various vocabulary words juxtaposed with an image of a human face in a neutral state. By interacting with the words, the face could transform to express various emotions that correspond to the vocabulary words, whether it is happiness expressed by laughter, or sadness expressed by tears. Reflecting upon this experience, we are able to form abstract concepts as described in Kolb's learning cycle. Continuing the learning cycle in the digital environment, we could be presented with two human characters and a range of words and phrases scattered across the screen including the "emotion" words that were previously introduced. We are then able to construct a dialogue between the two characters, using the given words and phrases and watch the emotional changes in the character's facial expression. We are able to draw

from and build upon the previous experience of using these words and to personally participate in the dialogue and begin to understand its emotional nuances, rather than reading about the dialogues of others in a textbook.

In a digital environment, algorithms can provide such relevant experiences and offer continuous feedback as a response to our interactions. The relevance of a digital learning environment is increased by the autonomy, choice, audiovisuals, safe environment, playful approach and challenges that can be part of such an environment **(Egenfeldt-Nielsen, 2005)**. The relevance of the experience promotes the student's engagement into the process. Once engaged, the ability to experiment with the material as described in the emotions example, can sustain the engagement and investment of the students. In a traditional classroom setting, it is possible to appear engaged without being so when listening to the teacher. In an interactive playful environment which requires learners to continuously interact with the material, it is much harder to do so.

Learning in a digital environment does not solve all educational problems. However, I believe via a carefully designed exploratory environment, we are able to present a complex subject, such as a foreign language, in a rich and dynamic way. The learner engages and connects with the material through multi-layered interaction building a strong investment in the subject. Continuous feedback from such an environment can serve as a guide for this investment. Interactive and playful experiences can lead to observation and reflection, helping students develop conceptual understanding of the educational material.

The application of this understanding upon further experiences within the interactive environment forms a learning cycle so vividly expressed in the experiential learning theory. ✻



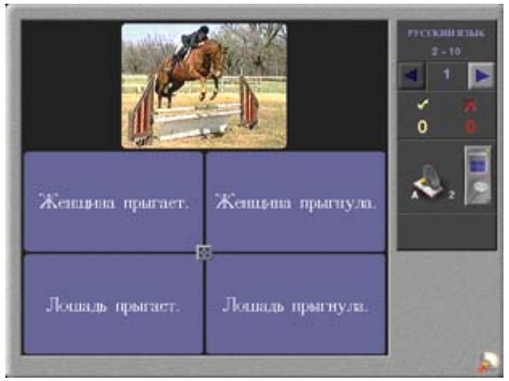
Overview of

# * Language Software

# 03

## Rosetta Stone Interactive Learning Systems

Rosetta Stone, developed by Fairfield Language Technologies is considered one of the most highly acclaimed software programs for foreign language instruction by the media. The reason for it popularity is two-fold. First, the software uses a novel approach in language instruction – learning without direct translation, memorization or formal grammar study. It claims to teach students a language by association, or close to the way children learn their first language. This aspect of Rosetta Stone software is the main reason I chose to review this program as I utilize learning by association in my case study. Secondly, the software is highly marketed – from the colorful displays in all major airports, bus stops, inside trains and taxis, to full page advertisements in a wide range of national newspapers and magazines. Rosetta Stone software is available in 29 languages spoken by over 90% of the world's population.

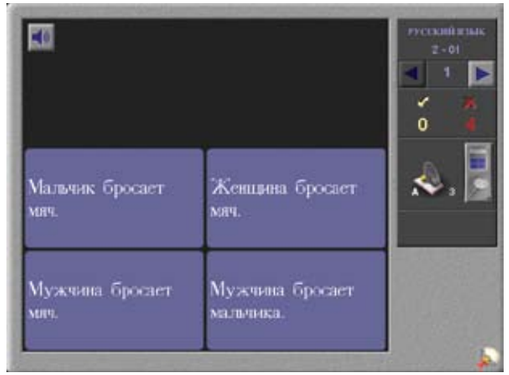

### THE EXPERIENCE

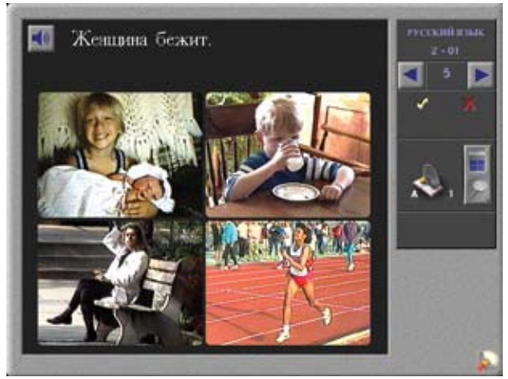
When we enter Rosetta Stone, we can choose a chapter/lesson that corresponds to our current level and knowledge of the target language. All chapters are structured in the same way where we see a textual and audio prompt of a particular word or phrase and a set of 4 images. Our goal is to pick the corresponding image to the prompt. If we click on a correct image, we receive 4 points and move on to the next set of text/imagery. The system uses deductive reasoning, where if our initial answer is wrong, we are still able to click on the next image until we are correct. There are 92 lessons, each consisting of four phrases varying in length from a word to several sentences. The positive feedback we receive from the environment comes in a form of an uplifting sound, a visual

clue of a check-mark, increasing score for the correct answer. The negative feedback is just the opposite, - a melancholy sound effect, a red X across the image, and a lower score. While we initially feel a degree of satisfaction from guessing correctly, this pleasure eventually dissipates due to the monotony of the lessons. The motivation for continuous use of Rosetta Stone is extrinsic; the rewards we receive are external and do not relate to the target language. While the system is very easy to use, the interactivity is limited to point-click-and-move-on to the next scene and the interface is very typical of traditional software packages – buttons, input fields, windows, etc.

The most obvious drawback of the Rosetta Stone program is the lack of cultural context. Following my exploration of several packages, including Spanish and Russian, I made an observation that the images used are the same for both systems. The images, the people, the objects do not refer to any particular culture or language which takes away from the learning experience.

Another shortcoming of Rosetta Stone is that it has no discourse. While we may learn how to describe a particular scene “A boy jumps on the table”, we never come across verbs like “to want”, “to love”, etc. There is also no social exchange, no negotiated meaning, no human and emotional involvement. The language used within Rosetta Stone is actually quite formal – lacking the basic phrases what would be used in a real-word situation. We never learn how to greet a person, we could not order a meal in a restaurant, could not perform even the simplest functions in the target culture.








## 12 Chairs Interactive

The next language learning software that caught my attention was 12 Chairs Interactive. 12 Chairs is a classic Russian film produced in the 1960’s, based on the 1920’s book with the same title by Ilya Ilf and Evgeny Petrov. The book is a satirical commentary on the transition from the czarist to the Soviet rule. Surprisingly, the book was somehow ignored by the Stalinist censorship and gained enormous popularity from the public. People memorized the story, held trivia contests; lines from the novel entered the Russian language as satirical one-liners.

The story follows Ippolit Matveevich who learns that before the Russian Revolution of 1917 when Bolsheviks threw his aristocrat family out of their house, his mother-in-law hid her diamonds inside one of her twelve living room chairs. Ippolit teams up with a con artist Ostap Bender as they pursue on a humorous journey, a trouble-filled treasure hunt for the diamonds. A particularly memorable scene is when the twosome interact with Ellochka the Cannibal, a fashionable young lady with a vocabulary of only 30 words.

12 Chairs Interactive is widely used in Russian language courses and is meant for intermediate to advanced students. The film is divided into 21 episodes and each episode is further divided into 3-8 scenes. The program provides non-linear access to individual episodes as well as the scenes.

The interface is divided into two major parts. On the left we see a video with the buttons for play/pause, stop,


replay, rewind and fast forward below. The right side of the screen is made up of three tabbed sections - Summary, Transcript, and Descriptions.

When we activate the Summary tab, the program presents us with a description of each scene. By clicking on individual words we obtain an English translation as well as the sound of the word's pronunciation. Certain words that change their meaning according to a particular context are translated as phrases rather than individually in order to establish accurate meaning. Additionally, the action or object that the picked word describes is reflected in the video.

By activating the Summary tab, we access a complete transcript of the dialogue. When we click on any line of the dialogue, a corresponding portion of the video plays on the left.

The Description tab provides a description of the cultural setting of the scene. These include cultural and historical notes. Such elements become important tools in understanding the content. Clicking on individual words brings up English translations, audio, still images and/or related portions of the film.

Foreign films have been used in language instruction for years. While this medium offers a tremendous advantage for presenting content in a natural cultural setting, students may find this approach to foreign language instruction overwhelming and frustrating due to an information overload. Often, the inadequate linguistic and cultural competence of students hinders their attention focus and emotional involvement with the film and the actual story.

As in the case of 12 Chairs Interactive, the digital medium resolves this problem. Students are able to watch the film divided into short scenes, and by interacting with the dialogue bring up visual, verbal and audio references as well as historical and cultural notes. These elements help them comprehend complex linguistic and cultural material. The hybrid of the cinematic and interactive media offers the best of both worlds - the immersive, emotion-driven experiences of film and the responsive/non-linear/user-controlled elements of interactivity. The emotional involvement with the story and the film drives the interaction with the educational material. The more students understand the story, the more involved they become - its element of suspense as well as utter hilarity to a point of ridiculousness makes students curious and eager to continue the interaction. The unique cultural setting of Soviet Russia undoubtedly adds to their curiosity. Students become active participants in the process. This is exactly where learning takes place.

What are the weaknesses of 12 Chair Interactive? While I commend a successful integration of "interactive" and "video" for the purpose of better understanding the material, I think the interactive element of the system is not explored nearly to its potential. For example, if we increased the complexity of the interaction, students could be interacting with the elements inside of the video - even as simple as providing appropriate verbal, textual or audio responses when the user clicks somewhere on the video. We could also deconstruct the video and have the students reassemble the dialogue by manipulating the text and/or audio elements.





Overall this program is a solid tool for a foreign language classroom. The approach of teaching a language via interactive video has been rarely done successfully, and this package becomes a great attempt to do so. The richness of the experience relies primarily on the story/film itself. Interactivity plays a secondary role and solely acts as an aid to understand the film. I believe this learning tool could be greatly improved if the richness was carried through the interactivity as well. ✻


* Case Study Part 1:
# LingoTown

# 04

# Origins of the Project

People who approach life with voracious desire are intriguing to me. When they embark upon a pursuit with passion, they seem to be living life in a way that is to be emulated, a way that is transcendent and meaningful. For them, life is continuous opportunity. Some innate motivator propels them through their endeavors, and it would appear to be a gift that one is able to experience such effective submersion in their world. When one has passion for something, they devour it. When one has passion for learning, they pursue it with enthusiasm, and their experience is much different than someone who is simply performing a duty. Passionate learners are like sponges that effectively soak up information, and they do so with great effectiveness. I find great value in this, and wonder if passion and learning outcomes have an inexorable link.

Fifteen years ago, the idea of passionate learning sounded like an oxymoron to me. Born in Ukraine, I grew up under the influence of a pedagogic regime that allowed little opportunity for individual expression. Students were judged on their ability to accurately memorize lessons and regurgitate whatever they were able to remember. This method assumed that everyone learned in the same manner, and that a passionate involvement with the subject matter was irrelevant, perhaps even unwelcome. I recall much of my early schooling with dread. I did not excel, and I suspect this was true for many other Ukrainian children.  I wanted to be intrigued, curious, and motivated. Instead, I found myself intimidated by my teachers and the didactic requirements that schoolwork seemed to entail.

Later in life, I experienced unmotivated teaching in my foreign language studies. At the age of fourteen, my family's

relocation to London and then Boston forced me to learn English – and learn it quickly. Struggling to understand new sounds and to recognize the meaning of written sentences was overwhelming. Equipped with armloads of English-as-a-Second-Language (ESL) textbooks, I memorized how to name objects correctly. Speaking and understanding the spoken language was a great deal more difficult for me. Having no previous practice conversing with native English speakers, the lessons that the textbooks taught seemed somehow ignorant of the way things were in actuality. Finding the right words and phrases to express feelings and emotions was an even more challenging task.

With practice, I came to learn how to wrap my thoughts in words more effectively, how to use the toolbox that the language provides more naturally and with greater skillfulness. My process of learning English was arduous - and I could sense that there had to be a better way to assimilate the information. Textbooks, as well as the school system, failed to excite my passion for learning the subject. Early in my graduate study, I realized that I want to help others learn a foreign language in a more playful and exciting way. I want to motivate students and engage them in the learning experience. I want them to become active participants rather than passive recipients of information. I want to help them become passionate learners.

Throughout my childhood and teenage years I experienced passionate learning in alternative ways to traditional schooling and textbooks. Subjects became of interest to me as a result of self-motivated experimentation, discovery and play. For my parents it was a known fact – if they forced me into an activity (12 years of gymnastics for example), - I was a passive and unmotivated learner. On the other hand, when they simply exposed me to an activity and allowed me to explore it on my own, the activity usually became one of passionate involvement. When I was 6 years old, I remember watching my father play the piano with an insatiable desire to try it myself. Eventually by way of experimentation I learned how to play this instrument. This experience seemed freer and more attractive simply because it was my own choice to partake in it.

Experimentation, discovery and play also became catalysts for my career as an interactive designer. My first conscious experience with the digital medium came about when I was enrolled in a London high school. New language, new school, and a new culture – were all elements that I suddenly and forcefully encountered, completely unprepared. My savior, my escape from the epitome of misunderstanding was a class that was offered at the school – "Design & Technology 101". Mesmerized by this new medium, I spent hours behind a monitor trying to come up with my own candy bar wrapper that was our assignment. Somehow I felt a sense of sheer comfort while exploring this new technology. However ambiguous the software appeared to be, the computer was the only entity around that seemed to understand me so clearly, that could respond so faultlessly to all my interactions. Not only had I constructed my own private dialogue with the computer, it was an extension of me and my creativity.

Years have passed since my initial encounter with a computer. In high school, through playful experimentation, I taught myself how to create pages by coding HTML. After graduating, I enrolled into a small liberal arts college with a major in Graphic Design and a minor in Information Technology. Since my sophomore year in college, I have worked as an interactive designer creating interactive kiosks, CD-ROM presentations, animated cartoons, Flash-based applications, and corporate web sites. At some point I began to recognize a pattern in my interactive work that had a strong influence of commercialism. My work became robotic renditions of the latest visual and interactive trends. I was losing my initial excitement and voracious attitude towards this medium. I wanted to change that. This was the starting point of my desire for graduate level study.

During my time at the Dynamic Media Institute, I gained a deeper exposure to new media. I became intrigued by the possible applications for new media upon my desire to help people learn a language. Thus was born my thesis journey. I delved into the ramifications of new media coupled with my desire to create a playful, interactive experience for those who wish to learn a foreign language. I have since designed a range of experimental modules which comprise a case study for my thesis research.

When I considered how to analyze my projects for this thesis document, I had a choice. I could evaluate the work conceptually, or I could do it chronologically. I considered all the factors involved: early project objectives, observations resultant from research and reflection, my own changing perceptions, and the interrelationships among these factors. I decided to examine the work chronologically, as the narrative structure best demonstrates the project's growth and evolution.

The case study is divided into three major parts - LingoTown, SurreaLexis, and MetaLingua. Each of the three parts is comprised of smaller experimental modules. As the case study proceeds, the parts assimilate evolved conceptual findings, inspirations, and research.

# LingoTown

So where did it all begin? What were my initial goals and objectives? How did they change over time? Did I accomplish them?

Over the course of two years, this project underwent a drastic transformation. I was constantly changing its visual form, pushing the levels of interactivity, and constantly rethinking various conceptual properties. Theoretical research into constructivist learning theory, experiential learning, interactivity, play and second language acquisition – have all influenced the development of my case study.

## GOALS

My initial goal was to create an educational computer game designed to teach basic Spanish. One might question my choice of language, considering my native tongue is Russian. However, I wanted to experience the game as a learner and test the game while I created it. I wanted to develop a game with a rigid structure, clear objectives, fixed rules and behaviors, and a user-friendly interface with convenient and intuitive access to information.

## CONCEPT, SYSTEM AND OVERVIEW

One of my preliminary concepts was to create a game situated within a virtual city, which becomes the backdrop for gaming activities that teach the basics of Spanish. A city serves as a metaphor for the acquired body of knowledge. Via small exploratory modules that contain humorous and playful missions, the learner advances from "scene" to "scene" and participates in various educational activities. As students progress, they acquire knowledge needed for basic comprehension, conversation, reading, and typing in Spanish.

In order to understand the analysis of LingoTown that will follow, I feel it is critical to provide a summary of the gaming experience.

We start the game in a room where we are prompted to type in a topic of interest. Unlike traditional linear language learning, the digital medium allows us to provide access to information according to the student's personal needs and interests. Depending on our choice, we find ourselves in another room that explores our topic of interest. In some cases, the user is presented with a crossword puzzle to solve. In another interactive adventure, we piece together a human character by naming all its comprising body parts. There are also humorous characters that we interact with, typing in answers to their questions and responses to their greetings. We can interact with the system in a wide variety of possible ways, and we are called upon to do so in a way that is entertaining and involving.

Interacting with objects and words onscreen allows us to move into the next room and further explore the topic that we chose at the game's onset. We have a choice of moving to parallel rooms in which we learn more vocabulary, or moving up to the next "floor" and reveal new challenges that involve more complex grammatical concepts. As we move through the rooms and levels, the system keeps track of our progress and reveals a physical structure as we discover and master it. This structure is LingoTown. The size of the city we see corresponds to the amount of knowledge we have gained. What becomes interesting is the relationship that forms between the individual objects and words, the smaller environments that these objects contain, and the larger structure of the city. All of these elements make up a system, and LingoTown, as a whole.

## USER MOTIVATION: CHALLENGES, CONTROL, FANTASY, CURIOSITY

How is the learner motivated to play LingoTown? Thomas Malone and Mark Lepper determined the four major motivations for game players as challenges, goals, control, and fantasy. All of these motivators are present in LingoTown, the game.

Each room in the system presents us with a challenge. In order to complete a challenge and proceed, we need to solve a linguistic problem. In one room, for example, we might see a jigsaw puzzle made of pieces with Spanish and English words on them. By dragging the puzzle pieces, the Spanish words would 'fit' to their English counterpart. If successful, we are rewarded by a good score and can progress to the next room. If we have difficulty, the system evaluates our mistakes, judges our learning style and preference, and presents the information in an alternative way. Suddenly we find ourselves in the same room, but the puzzle is now comprised of images and sound pieces of the same vocabulary words we failed to recognize the first time.

In a digital medium, such use of artificial intelligence to accommodate different types of learners becomes quite useful and beneficiary for learners. Interactive content can be extremely flexible where it simultaneously engages multiple senses and offers a range of methods in which to acquire new information. Learners can explore the system freely, without the negativity of judgment from more advanced students or the embarrassment of staying "behind". Even the least competitive users find themselves motivated to complete these challenges and move to a new level.

Any good gaming system, regardless of type, requires a set of rules that govern play. It is hard to imagine a game without rules. For example, if the game of golf did not have rules, chaos would ensue and players would be in a disorderly and possibly dangerous situation. Some players might simply drive to the hole and place the ball directly into it, since the objective is accomplished that way minus all the pageantry associated with taking a swing, gauging your environment, and all the other elements of golf. Obviously, the equipment, the player's swing, and the hazards of the course are all necessary attributes of the game. These rules make golf the game that it is, and rules are what give it continuity. Continuity, in turn, allows for goals to be established. Once there are goals, there is motivation, and motivation is of utmost importance.

In LingoTown, goals are straightforward. Players need to solve linguistic puzzles, advance from room to room, and ultimately reveal a virtual city. Challenges are presented as obstacles the player must overcome to advance in the game. As they gain knowledge of the language, they gain command of the virtual environment. As they assemble vocabulary and learn a language, they also reveal LingoTown.


**4.1**
Introductory screen prompting the user to type a word of interest in order to begin the exploration. Users can input this word in either Spanish or English.


**4.2**
Subsequent screen demonstrating the topics branching from the initial word of interest. Themes and topics within LingoTown are structured in a non-linear fashion and build upon the user's unique interests.


**4.3**
By activating the translation tool available in the left toolbar, users can explore the topics with a magic magnifying glass which translates any word it crosses paths with. This tool also covers words that are part of the interface like menu items and button labels.


**4.4**
The user may drill deeper into the structure of the system, choosing a narrower subject of interest.


**4.5**
This screen demonstrates further drilling into the topic of interest. Once the topic is chosen, LingoTown presents a gaming activity according to that topic.


**4.6**
One of the many activities within LingoTown is a puzzle game. The objective is to match an English word to its Spanish counterpart. Over on the right, the user receives continuous feedback on his/her performance via the timer and the correct/incorrect counter.


**4.7**
When the puzzle is complete, a ladder becomes visible leading us to another activity room. This room on the upper level holds a mission exploring the same topic only with an increased level of complexity.


**4.8**
The goal of this mission is to travel from point A (green circle) to point B (orange circle). In order to move from cell to cell, the user needs to answer questions correctly. Wrong guesses result in a crossed out cell which now blocks the user from moving through it.


**4.9**
Another activity allows the student to utilize his/her visual memory skills. The objective here is to match a Spanish word and a corresponding visual and to clear off the screen. When a match is found, the pair disappears from the screen.


**4.10**
This room demonstrates a grammar exercise. The Spanish language includes a concept unfamiliar to English speakers - the word gender. This activity engages the user to play with a series of nouns and try to catch the nouns with a correct gender platform in order to complete the mission.


**4.11**
When traveling, time becomes one of the most useful topics to remember. This activity explores this topic through multiple-choice question/answer exercises.


**4.12**
Here, the student explores the human body. By rolling over a word, a corresponding body part is highlighted. In a similar fashion, by rolling over a body part, a matching word is highlighted. The student makes visual connections from the word to its meaning.





**4.13**
This room demonstrates another playful activity, where the student is able to build his/her own virtual character by naming and choosing all the body parts in Spanish.

**4.14**
Eventually the virtual characters become the student's conversation partners as well as helpers that guide the student through the world of LingoTown.

**4.15**
The complexity of the missions increases dynamically according to the knowledge gained. In this activity, the user participates in a "blind date" scenario.

**4.16**
In the case of a successful completion, the user moves up one level. In case of failure - the user moves sideways exploring more vocabulary or sometimes the same topic presented in an alternative way. By doing so, the user reveals a city where the completed rooms become visible structures. This virtual city is a metaphorical representation of the student's new knowledge.

Constant shift of control between player and system is a major contributor to a user's motivation in a game. In LingoTown, control over the system is something that the user gains as positive reinforcement for their successful play. If they are not successful in their challenges, they lose control. For example, if a player solves a puzzle correctly, they can choose where to go next. They could explore more vocabulary, increase the complexity of the grammar they are learning, or pick a new topic. If the user is not so lucky, the system strips him/her of control and only allows to participate in a room with an alternative representation of the same material.

When designing a game, we have to consider that user motivation in game play is not universal. We cannot achieve it using the same methods for everyone. Some are motivated by play itself, while sounds and visuals motivate others. Some players might be driven by a competitive streak, while others might be compelled purely by curiosity and have much less of a desire to compete. There are also those who simply need an element of fantasy to sustain their interest in a game. Naturally, a virtual world can be as fantastic as the imagination and creativity of its designers. LingoTown presents a fantasy environment comprised of humorous characters and the surreal world that they inhabit. Players are allowed to dynamically build their own characters by using the Spanish language to describe them. This gives control to the user and allows them to manipulate the fantasy environment, creating their own elements of the game. These characters serve as helpers in difficult situations, while on occasions, they become our conversational partners, and in most circumstances they simply add a human element to a language learning game.

## LANGUAGE LEARNING

Soon after proposing this project, I found myself in a challenging predicament. For one, I was trying to teach a foreign language without much teaching experience or any formal education in linguistics. Secondly, I had no knowledge of the Spanish language. The conceptualization and development of LingoTown happened months before I researched various language acquisition and language teaching theories. I relied on my intuition and personal experience learning a foreign language, as well an analysis of existing language software. While it would initially appear that this would pose more problems than benefits, that is not entirely true. I was able to develop the game from the perspective of user as well as developer.

Linearity and inflexibility are characteristics of classic language instruction that discourage many students. Fortunately, in a digital system, we can easily avoid these stumbling blocks and develop dynamic content and curriculum. LingoTown builds itself upon the user's interest. The system first asks the user to offer a word. From there, the user explores content surrounding that word. In a broad spectrum of a language, we all have interests and curiosities, and the learning process in LingoTown is initiated by the user's individuality.

The teaching methodology in LingoTown is the drill-practice-and-repeat cycle. Learners encounter a variety of gaming activities where they are introduced to vocabulary words that are related to their individual pursuit. By successfully completing the vocabulary mission, they may move on to explore more complex levels of educational content. LingoTown stresses reiteration of the material by repeating the same words in different contexts throughout a range of activities. At any point the player may look up words in an easily accessible dictionary and check on a particular language rule in a grammar guide. Each activity is divided into two major parts: a discovery room where the learner explores content; and another game-like interaction where they are tested on their knowledge. If successful, the user moves on. If the player encounters difficulty, the system identifies their learning style and allows them to explore the same content using alternative representations.

A major aspect of LingoTown is the use of direct translation. I use a magic magnifying glass that can translate words into their Spanish or English counterpart. This tool is only available in the exploratory portion of the activity and is deactivated during testing. The system encourages users to employ the magnifying glass in order to discover the meaning of unfamiliar content. While a dictionary is available for a more straightforward approach, the magnifying glass becomes a layer that adds to the playfulness of the experience.

LingoTown stresses correct pronunciation - a critical element of learning a foreign language. Pronunciation is practiced and enforced through conversations with humorous characters, designed to be native speakers of the language that is being learned. Voice recognition technology permits us to design a system where we can simulate real conversations in a virtual environment that provides intelligent feedback.

## REFLECTION

One of the major strengths of LingoTown is its playfulness. Every mission was designed to involve the students in a competitive, fun and goal-oriented activity. The sheer pleasure of completing a mission, getting a high score and revealing a new environment becomes an important component of the playful experience. The learner's ability to first build and then converse with cartoon-like characters in a virtual environment added to the fantastical novelty of the gaming experience.

LingoTown, however, touched upon only some of the issues that a complex interactive learning system poses. It quickly became apparent that this rendition had shortcomings, and among them were issues with interactivity, interface, and language teaching.

I initially viewed interactivity as I was used to it – point, click and get information. What I failed to investigate is the tremendous potential new media offers as it interweaves itself into play, education and the human experience. At the time, I viewed interactivity as a mere tool to get "into" another scene within the system. Conceived in this way, interactivity becomes an obstacle to immersion – a concept that conveys the state of being totally inside a created world both virtually and emotionally.

The interface of LingoTown became another barrier to immersion. Intuitively, I began my visual studies with preconceived notions of what a computer game should look like; generally they have a menu with options to start a new game, to save your current game, and perform other basic tasks. I also imagined that my menu would provide buttons for easy access to a dictionary and a range of grammar chapters.

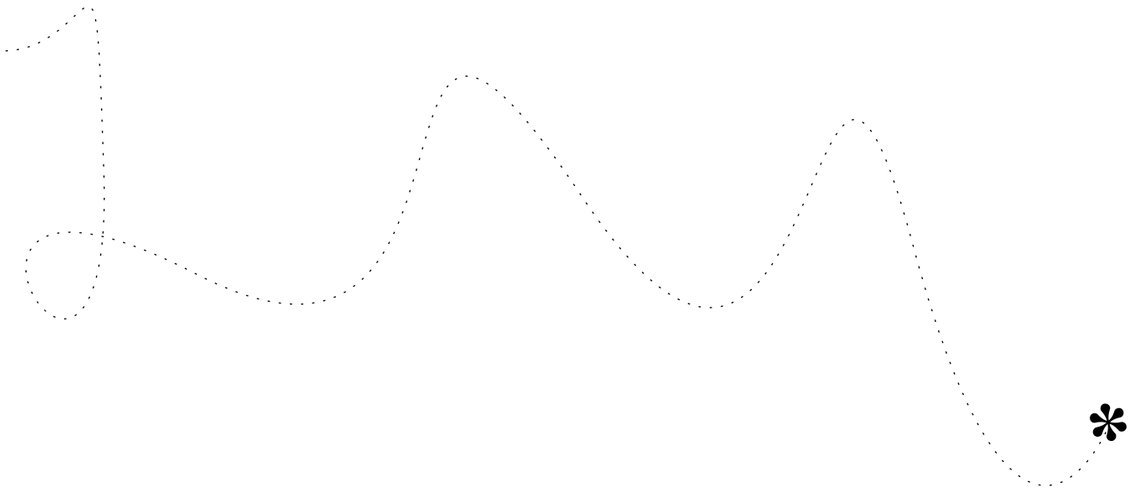
This interface is structured and rigid. It can only be altered in insignificant ways and actually detracted somewhat from the gaming experience. Unfortunately, the "user-friendliness" of the interface was in the way of its playfulness.

While I list playfulness under the strengths of this version, the nature of play itself suffered because I set about designing game play with the influences of other electronic games in mind. The activities used existing gaming concepts such as crosswords, jigsaw puzzles and digital flash cards, but failed to utilize the full potential of the interactive medium. I realize that my initial design reflected many of the characteristics of commercial software. My brief encounter with existing digital language programs, sans a critical analysis, resulted in biased opinion of what is acceptable for teaching a language in a virtual environment.

My research on language acquisition theories which I conducted later in the process also revealed some of the weaknesses of LingoTown. It appears that I unknowingly followed the principles of the Behaviorist Learning Theory which asserts that language learning can be achieved by developing a set of habits. This theory was highly criticized and challenged by linguists due to its failure to accurately explain the nature of language acquisition. The language learning in LingoTown is based on memorization and regurgitation – something that I was personally against in my early authoritarian schooling in Ukraine. This important realization had a tremendous impact on future iterations of this project.

LingoTown also failed to effectively convey the culture that surrounds a given language. I created cutesy, cartoon-like characters that spoke Spanish, but they could have been speaking any language in the same environment. In the next two parts of my case study, the characteristics that make cultures unique become crucial. Native context becomes an essential, enriching quality of the experience.

Finally, the static nature of this phase did not allow for the observations of people actually using the system. While we can contemplate play and experience, the nature of these words calls for action. Because of the uncertainty that human curiosity and touch can bring, any complex game requires iterative design that takes human experience into consideration. ✻




* Case Study Part II:

# SurreaLexis

# 05


# SurreaLexis

Fortunately, graduate study allows for the iteration. I rarely have a pre-planned storyboard of the entire project before I begin working on it. I dive into it, head first – exploring and experimenting with the sea of possibility, and most importantly – I play.

Certain peculiarities emerge from this process. Nuances that I had never imagined during preliminary conceptualization become a major influence on the final outcome. SurreaLexis, an extension of LingoTown is not an exception. I wanted to rethink, redesign, and reinvent this project. I wanted it to grow, visually and conceptually.

In SurreaLexis, I reinterpreted the meaning of my thesis title - "Experiential Learning of a Foreign Language via Interactive Play". While the ultimate goal for my case study - to create a playful interactive learning system - remained the same, the project's form, methodology and key properties changed dramatically.

The most significant change lies directly in the gaming experience. SurreaLexis is no longer a game. Rather, it is an exploratory environment with a fluid structure and flexible rules. The environment is culturally based, and the player's interaction with the system is driven by curiosity. It could be said that SurreaLexis is more about experimental discovery than completing missions. The focus is no longer on scores or tests. No longer do we have to follow someone else's rules. Instead, we create our own.

## SYSTEM & OVERVIEW

Structurally similar to LingoTown, SurreaLexis still resembles a city. As in the previous rendition, we uncover the city room by room, however, the city's shape is a dynamically expanding circle with our main room at the center. We begin in the main room and move outward as we discover the content, which causes the circular city to grow. The metaphor is simple; as our knowledge of a new language grows, so does SurreaLexis. Our experience starts at the Language Headquarters at the heart of the city. This room is circular, and we are able to sporadically explore the content around its circumference. The first thing we encounter when we enter the system is a tall window, opening to a spectacular view of Barcelona, Spain. We notice a fully stocked bookshelf inside the room. The leather spines of the books reveal a range of topics - Travel, Food, Hotel, Restaurant, Greetings, and Emotions among others. We now have a choice. We can continue to explore the main room and locate various objects that will help us in the future, like the translating magnifying glass. Alternatively, we can click on the book that interests us, which moves us to another location where we can play with content related to the topic.

The essence of play is captured inside each activity. Each one consists of an object and a series of words related to the topic. Because there are no written rules, the user needs to play and eventually discover that they can maneuver the elements within the environment by interacting with the objects that they encounter. They can poke and probe, click and drag, experiment and play. This curiosity-driven tinkering gives them deeper access to an unknown virtual environment and deeper understanding of a new language. Once they solve a visual and verbal puzzle, they unveil the next intriguing environment.

## INTERFACE, INTERACTIVITY AND SEDUCTION...

In SurreaLexis, the visual interface is a world away from the previous version. Abandoning all the aspects of a traditional software interface, such as menus, buttons, and windows, I introduce a much more subtle way to interact with the environment. We move through SurreaLexis guided by a dynamic cursor. This cursor changes its appearance according to its current function. It could be a clutched hand for dragging, an arrow that points the right way, a magnifying glass for translation, a plus sign for exploring something further, a "T" for typing, etc. These metaphors are intuitive and helpful in our interaction with the system. We can experiment with the given elements and learn how the system works by the continuous feedback we receive.

I begin to introduce and emphasize a cultural context within SurreaLexis as a major breakthrough from the first rendition. By exposing learners to Spanish art, architecture, history, and music, I hope to extend their knowledge of the Spanish language beyond simple words and phrases. The resulting experience is both informative and visually tempting. In one activity, for example, we are exploring the names of months. By correctly naming each of twelve stepping stones, we hope to transcend time and bring a fictional flamenco dancer to a major Spanish fiesta that takes place in March. In addition to learning the names of months in Spanish, we also learn about a real cultural event. We are able to participate in a virtual representation of this event by successfully completing this activity.

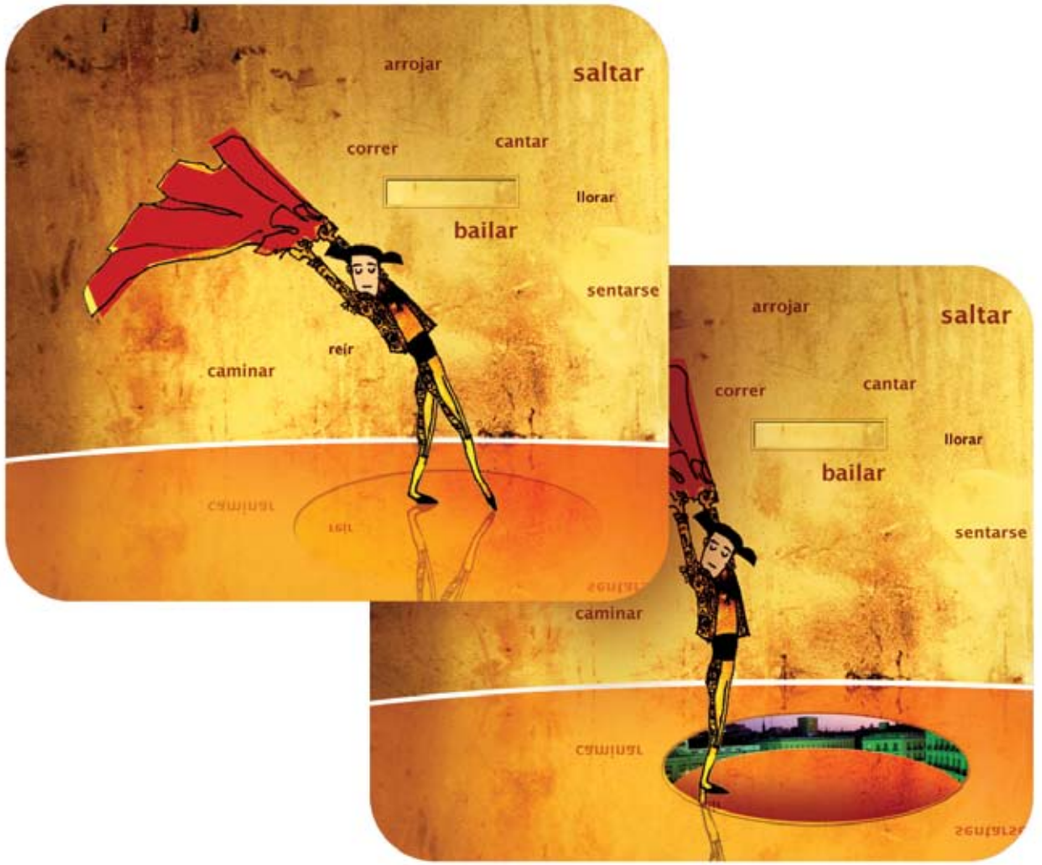
SurreaLexis blurs the line between the virtual and the real. Visible both in the visual form and its content, I borrow characteristics of real life but present it in a surreal way. Partially, this aspect plays upon the cultural reference of a Spanish surrealist Salvador Dali. Most importantly, however, it allows me to bend time and space within the SurreaLexis environment. Doing so creates opportunities to further ignite the learners' sensory curiosity via the visual paradoxes and their cognitive curiosity via the contextual ones.

The Time Explorer room exploits these opportunities. On the wall we see a surrealist-like clock. The curvy shape of the clock face implies that we somehow might be able to affect its shape or function. Next to the clock is a window with a view of a Spanish countryside. Soon we notice a curvy line of type moving and expanding as it approaches the clock. The line of type reads "It is four twenty-five" in Spanish, and the solution to this puzzle is to rotate the clock handles so they correspond. For those learners who can already tell time, this activity is a no-brainer. However, for some, this might be a challenging task. To avoid confusing or frustrating the user, there are a series of visual responses to users' interactions. For example, when we roll over the crawling phrase, we notice that the time of the day outside of the window had changed to reflect 4:25am. A bright sunny afternoon transforms into a dark early morning in the Spanish countryside. Simultaneously, if we rotate the handles on the clock, the time of the day outside the window changes accordingly. By playing with the clock handles and phrases and witnessing how they affect the time of day, we are able to bend time to our benefit. We learn the meaning of each phrase by reflecting upon the visual feedback we receive.

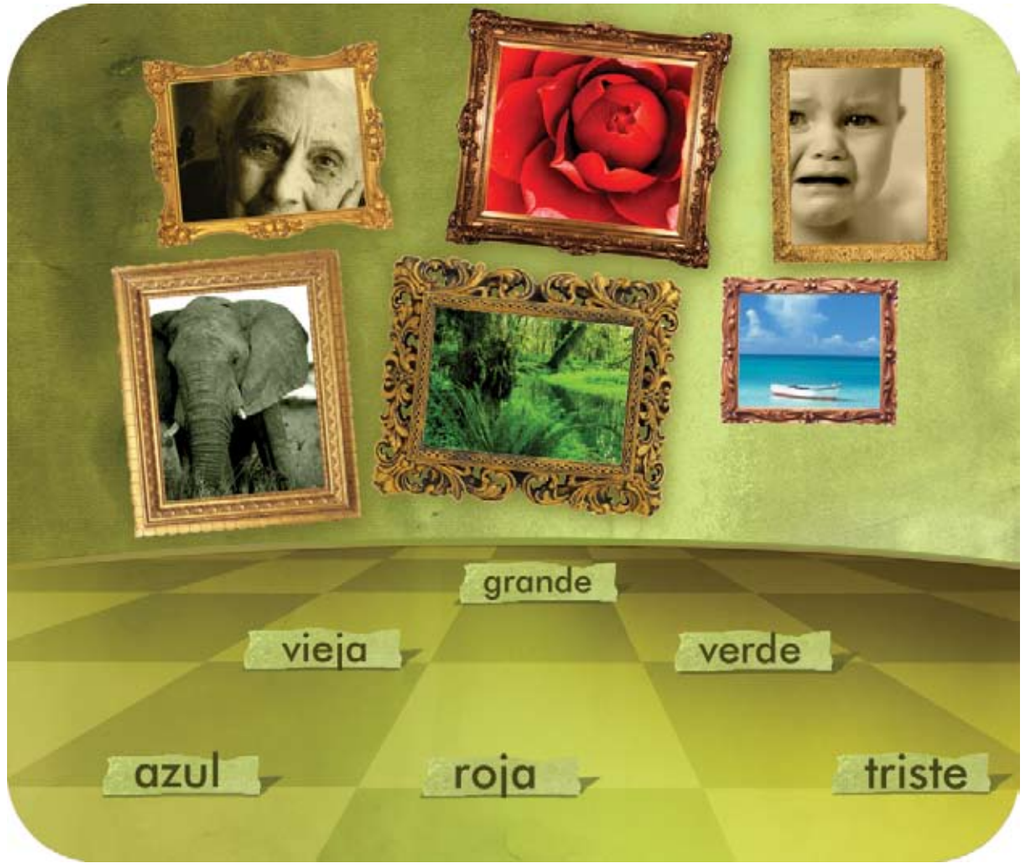
Language Headquarters

Month Explorer


Verb Explorer



Adjective Explorer




## LANGUAGE LEARNING

During this version I researched existing language teaching methodologies. My findings had a substantial impact on the overarching pedagogy in SurreaLexis. Rather than following the principles of the Behaviorist learning theory of LingoTown, I focused on a teaching approach that linguists consider more advantageous when it comes to language acquisition - Constructivism. The philosophy of constructivist learning proposes that learners construct knowledge for themselves rather than simply receiving it from knowledgeable instructors. SurreaLexis applies this notion to its methodology in a way that makes learners active participants in the learning process.

Another noteworthy change from LingoTown is my decision to move away from using direct translation and instead embrace a more experimental and daring approach: teaching by association. Associative learning is a key attribute and strength of new media due to its ability for multiple representation of material. In an associative environment, learning is promoted when new information can be integrated into the existing knowledge of the learner. It is facilitated when two or more similar learning contexts are available for learner's comparative interpretation. Research shows that learners remember objects and images of objects better than their names.

Consider the following advantages. Learning to associate new words with what they signify skips the middleman, namely, the same word in our native language. This method brings the learning of a foreign language closer to the way we learned our first language. When we try to learn a language by direct translation, we tend to memorize the names of words rather

The Weather Activity in SurreaLexis





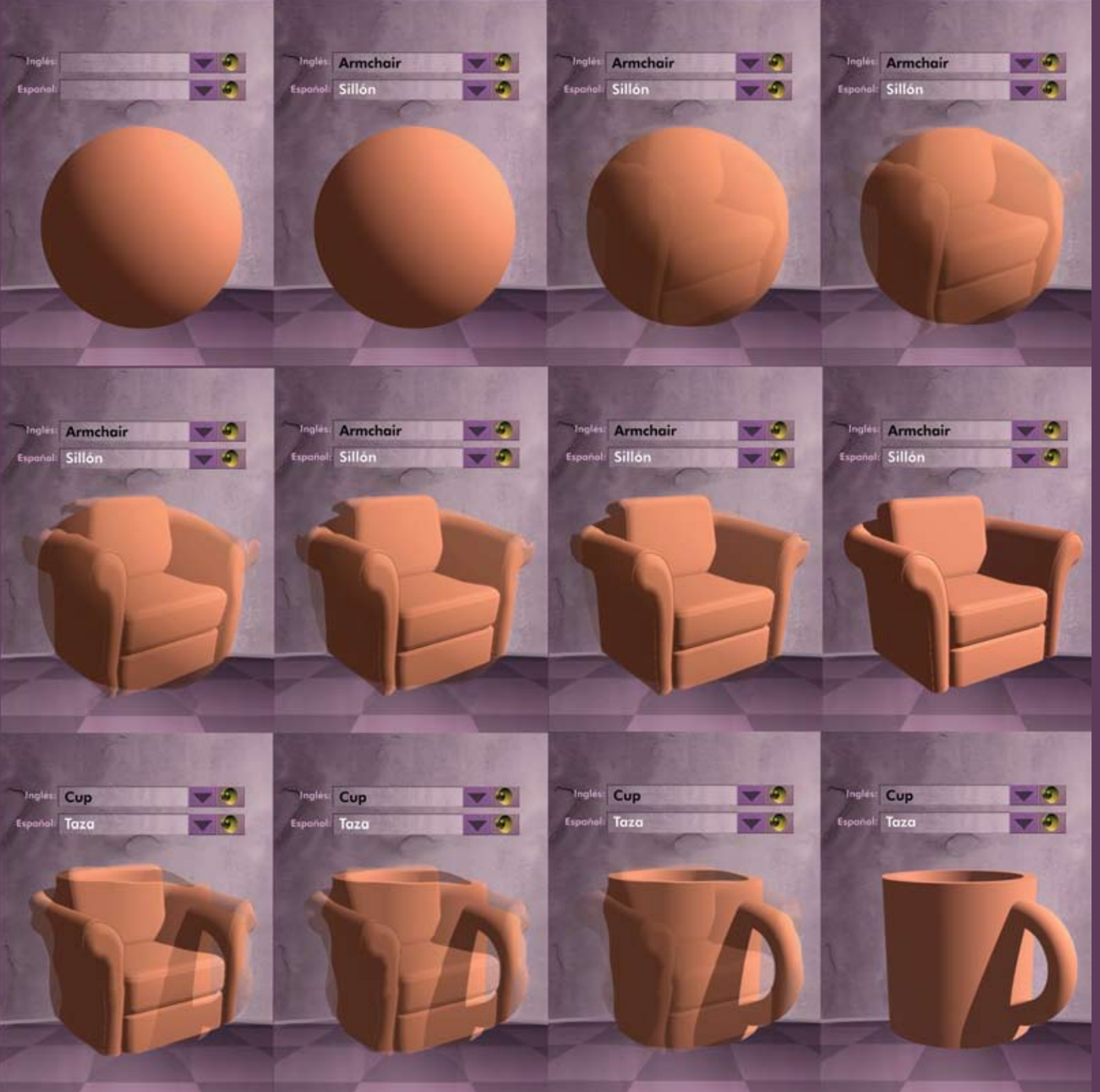

than their meaning. What is important to avoid when speaking in a new language is the mental translation from your native tongue to the foreign. Learning by association can dramatically reduce the time it takes to think in a new language.

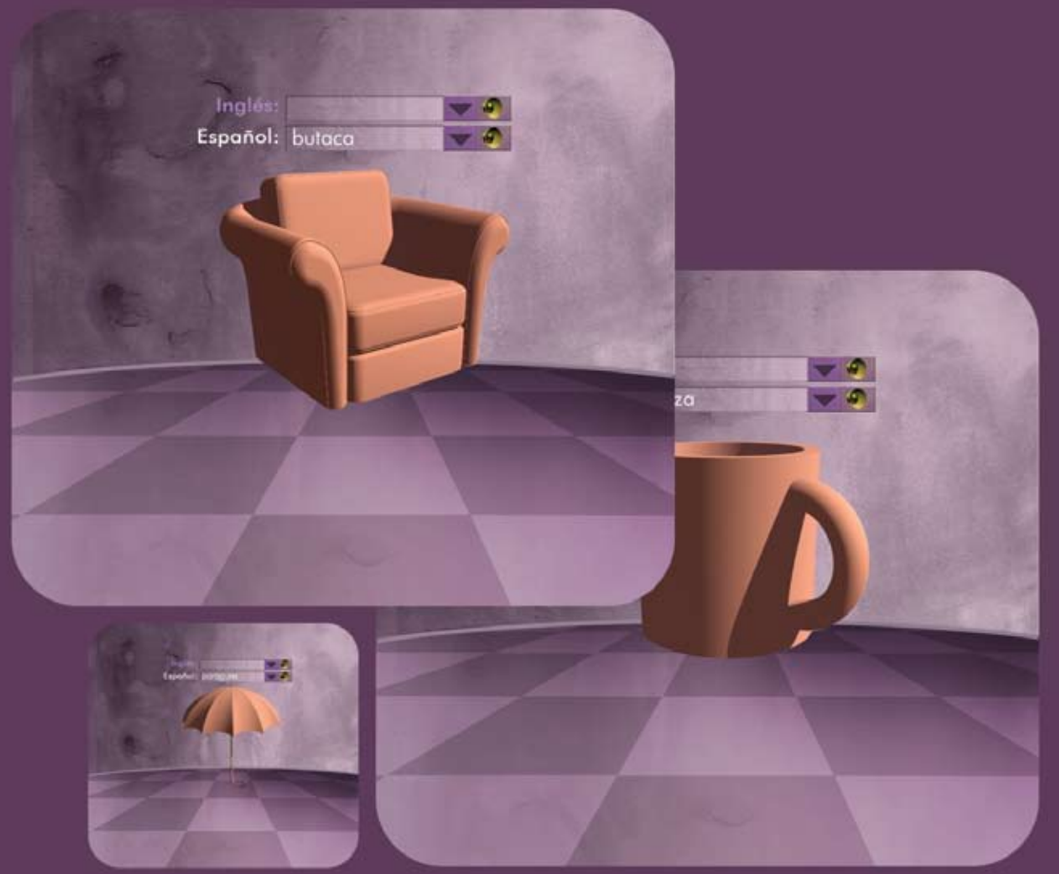
This approach, however, has some drawbacks. While it is fairly simple to provide word-to-object associations, more complex speech might be very difficult to express in non-verbal representations. My solution was to use association for as long as it makes sense to do so. Once it becomes confusing for the learner to understand the language through pure association, direct translation might be used to provide supplementary clues.

The Color Explorer exemplifies learning by association. When we enter The Color Explorer, we see a drawing board and eight colorless pencils labeled in Spanish. We can experiment by drawing with each pencil and seeing what color it produces. In this way, we learn the meaning of the Spanish word visually.

Another example of this concept is evident in the Weather Explorer. In this case we see a range of Spanish words describing concepts related to weather: "hot", "cold", "sunny", "cloudy", etc. A central object in this scene is a window. By dragging the words on top of the window, we witness the weather change accordingly. Again, we reveal meaning by observing visual responses from the environment. These responses are cued by our play and experimentation within the virtual environment.

Another activity in SurreaLexis that makes use of learning by association is the Object Explorer. Here, we are able to input


Inglés:
Español:
Armchair
Sillón
Cup
Taza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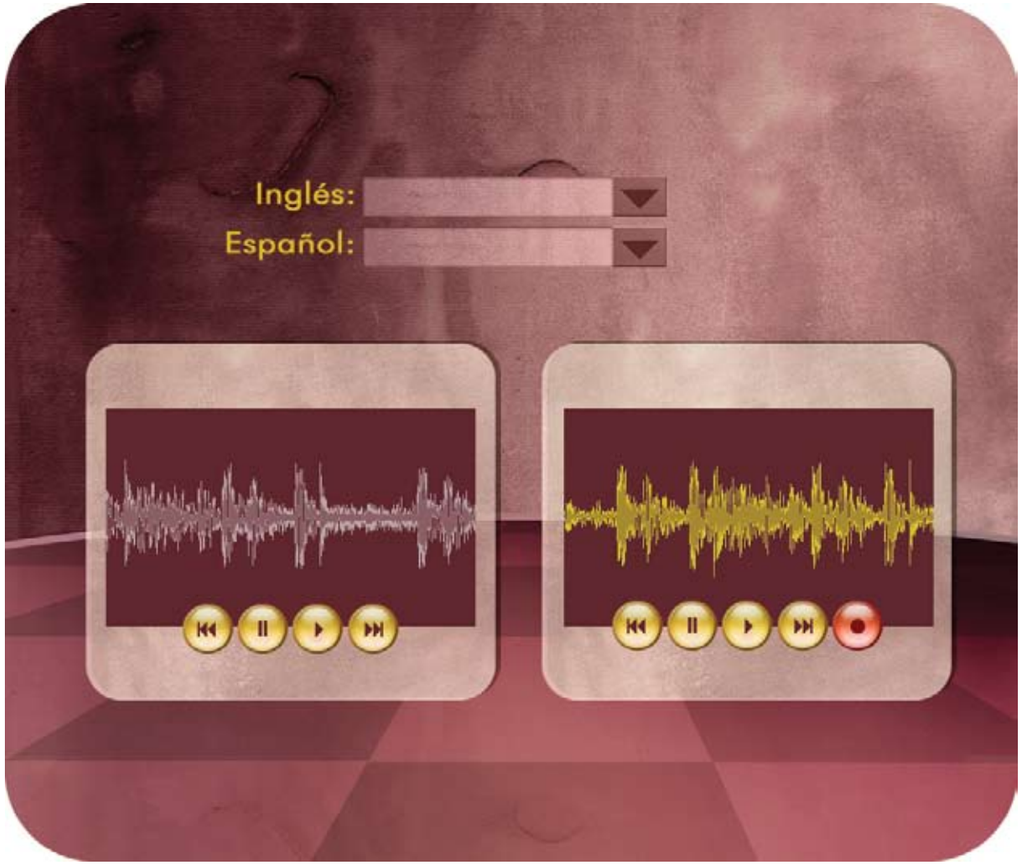
Speech Evaluators








or look up any Spanish noun and watch an amorphous three-dimensional shape change into that object. These dynamic visual formations help us understand new vocabulary. As it morphs, the shape assumes the color of that noun's gender: pink for feminine, blue for masculine, and beige for neutral. I view the action of morphing as an additional learning tool where the student does not simply access an appropriate image from the database, but rather transforms one object into another by changing the words that describe these objects. The feeling of control and responsibility for what is happening onscreen allows for a stronger relationship between the student and the educational material. Learning through visual metaphors helps students connect the word to its meaning and linguistic properties.

An important component of language development is learning correct pronunciation. Research shows that the ability to pronounce unfamiliar sounds can improve if pronunciation is exaggerated. While we may sound silly and incompetent at first, learning to bend your tongue in new directions takes time. I designed a series of Speech Evaluators that are scattered throughout the environment and help learners with their pronunciation. We can choose to type in any word or phrase in Spanish and hear it pronounced by a native speaker. Our goal is to use a microphone to replicate the sounds we hear. The voice recognition will only activate if we speak loudly and clearly. This forces us to exaggerate our pronunciation. By activating the voice recognition in each case we run into such an "obstacle", SurreaLexis allows us to move on to discover new and exciting visual, aural, cultural and contextual material.

**REFLECTION...**

My goals to create a purely exploratory learning environment as opposed to a game proved to have some implications. Once I removed implicit goals from the system and relied on self-driven exploration – the learner's enthusiasm to use the system subsided. While the users were initially drawn by the uniqueness of the visual form of the interface as well as unusual interactive behaviors – the excitement was short-lived. It was not clear for the learner what to do next or what they can interact with and what affect, if any, they had on the system.

While we might master the recognition of Spanish words and phrases, one major drawback of SurreaLexis is the lack of human and emotional involvement. The gap between abstract concepts and their application within more tangible context is still wide. Real context can be hard to define, but I view real context as the use of the language in an actual conversation. The emotional qualities of human conversation are invaluable elements that enrich and improve our language comprehension.

My inexperience with the Spanish language and culture is a persistent issue in my case study development. My desire to become my own system tester, to start from scratch together with the user, to learn as I teach, proved to be more difficult than I expected. Had I acquired more substantial knowledge of Spanish cultural and linguistic nuances, I would have been empowered to bring a higher level of teaching potential to the project. Recognizing and addressing these flaws however, encouraged me to continue the iterative design process.

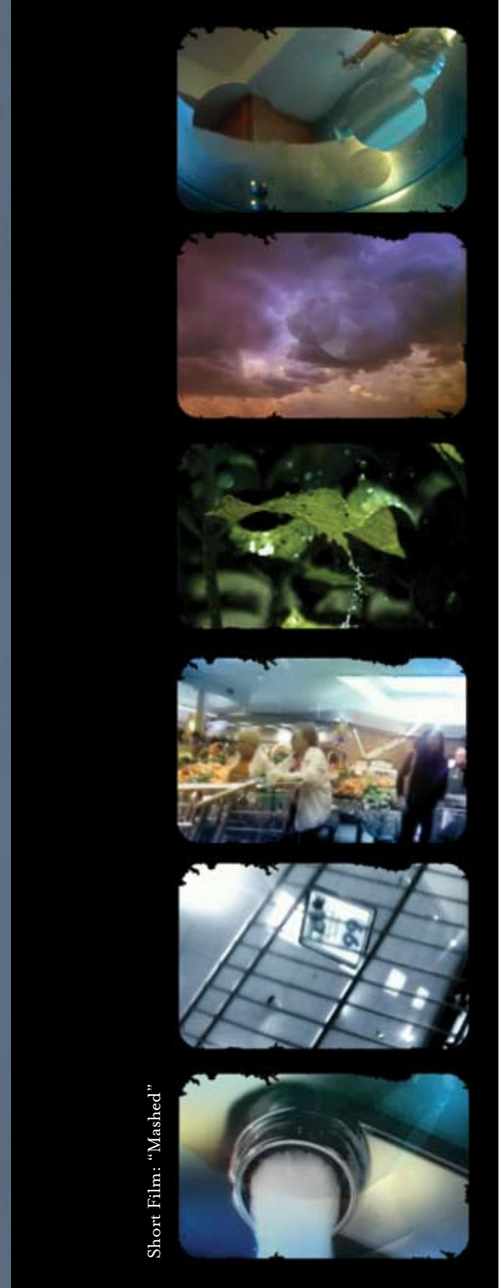
SurreaLexis radically differs from LingoTown. It contains a new approach, new methodology, new tactics, new behaviors, new unique visual paradoxes, new parameters, and new metaphors. These are all designed to excite our curiosity and make us want to play the elements that visualize a new language.

The process doesn't end here. Armed with new insight and inspiration, I was ready to start a new chapter of my case study. ✻

* Case Study Part III:

# MetaLingua

# 06



Short Film: "Mashed"

# MetaLingua



About a year ago, in the fall of 2004, I experienced a major breakthrough in my work. I was fortunate enough to be part of a class called "Design for Motion + Sound" at DMI taught by Jan Kubasiewicz. I was introduced to cinematic language for the first time in my career. I completed my first short film, "Mashed", in this class. The film visualizes the last moments of a dying potato which is being boiled for a Thanksgiving dinner. In this tragic but humorous exploration, we witness the potato's life flash in front of its "eyes" from its perspective.

My second short film was even more playful and experimental in nature. In a cinematic adventure titled "PhonOpera", I visualize a phone conversation between a violin and a piano.

The connection to my case study is clear; I was so inspired by the creative freedom I experienced while working with film that I decided to incorporate this medium into the next stage of the project. Integrating a cinematic vocabulary into the project simultaneously allowed me to address a troublesome shortcoming of the last iteration, a lack of human and emotional involvement.

One way to integrate cinematic language into the realm of interactive media is through using real people in video. "This new medium needs cinematography that can satisfy both the emotional and the interactive aspects that arise from the interplay of human participants and virtual characters" **(Tomlinson, 1999)**.

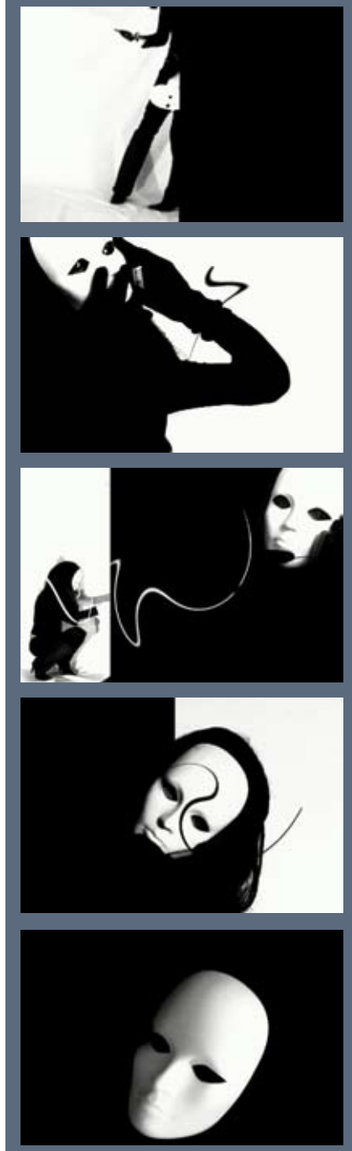
How does cinema contribute to the learning experience? Cinematography visually guides the viewer. This medium

allows me to design a fictional reality which leads the learner through the complexity of educational content. By experimenting with the expressive qualities of cinematography, I open the door for an immersive learning experience.

Cinematography calls for an emotional investment from the viewer – the camera, lights, frame, shot, editing, acting and soundtrack make up a dynamically flowing platform which guides the viewer's emotions throughout the experience. A carefully orchestrated cinematic sequence of images may alter how the viewer perceives a particular event. Manipulation of the learner's perception contributes to the emotional investment in the learning experience.

Editing in cinematography becomes an invaluable tool in guiding the user experience. As Alfred Hitchcock points out - "movies are life with the bad bits cut out". Juxtapositions of interrupted cinematic imagery allow the creator to evoke viewer emotion, change the viewer's perception, transcend time and geographic location, show parallel action happening at the same time in multiple locations, dramatically emphasize critical events or downplay non-significant ones, among others. If used correctly, these powerful exploitations can strongly influence the learner's experience within an educational environment.

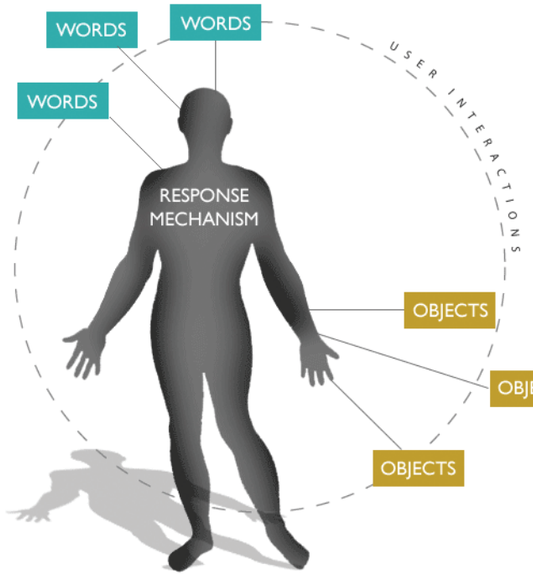
In an interactive environment, cinematography may also help drive the story/narrative which in turn helps to sustain the learner's interest and curiosity. However, a major challenge surfaces when the interactive medium is combined with cinematography, particularly as it relates to storytelling.



Short Film: "PhonOpera"








In a digital learning environment, users want to interact, not simply watch the action. Cinematic flow of imagery needs to interweave itself into the interaction rather than cover it up in an artificial way. The experience, in order to become immersive, cannot be interrupted or switched from interactive to cinematic abruptly. Instead, cinematography should enhance and guide interactivity.

### THE NEW APPROACH

Interactive video is a natural extension of the visual and contextual responses from which we learned the language in the second iteration of the case study. Aside from verbal and grammatical matter, we are now part of a social setting. In MetaLingua, I use a human character, named Roza, as our major source of feedback. She responds to all of the interactions with words, objects, and our verbal input. She may gesture a response, display emotion, speak to us, or transform her state or location depending upon the cues that the user provides. Via these responses, Roza becomes a teaching aid as well as a conversational partner. Being able to have actual conversations brings a social meaning to our interaction with the material, unlike the more abstract interactions we experienced in the last phases of my case study. As a human character, she also helps to bridge the gap between the user, new linguistic concepts and the unusual interface. It is through her social and emotive responsiveness performed in a personal and almost intimate manner, the student can establish a deeper emotional investment with the material. Furthermore, her physical responses captured in a series of subtle and intriguing motion sequences help this investment on both - cognitive and sensory levels.





## THE LEAD CHARACTER

My choice to employ Roza as a lead character of MetaLingua is far from accidental. When I thought of the concept of using a human character in my system, she immediately came to mind. Her energy, positive aura and a bright personality, coupled with an enormous talent for acting made her the perfect candidate for the role. I also owe her credit for some of the hilarity that ensued in particular scenes due to her improvisational skills. Her liveliness and her sense of humor, her powerful stage presence, her gracious movement and natural ability to entertain were not necessarily planned in my storyboards. Rather, these elements were born out of her individuality and the actual process. I was constantly filming and re-filming, editing the video and using accidents to my advantage. Some of these accidents worked well within the scope of the project, while others became the perfect material for an outtake section on the final DVD.

In one particular scene, we were filming her pronunciations of the alphabet at MassArt's blue screen studio when suddenly a person dressed in a goblin suit walked onto the set, directly into my frame. To everyone's surprise (there were at least five students in the room at the time), Roza got up and gave the goblin creature a big hug. Apparently, that day was Halloween, 2005.

In another instance, we were filming the sports section for one of the language activities when I asked her to kick a soccer ball as a future response to user interaction with the word for "soccer". She kicked the ball and inevitably knocked over the lighting post that I had meticulously positioned on the set.

During the process Roza has stoically endured many of my, as she described them, "crazy ideas" – having water poured all over her for the "rain" reference, letters projected on her face for the alphabet section, having to dance sporadically in the presence of a large group of students, even performing a mild form of striptease meant to help the learner understand the meaning of the word "hot" within the weather activity.

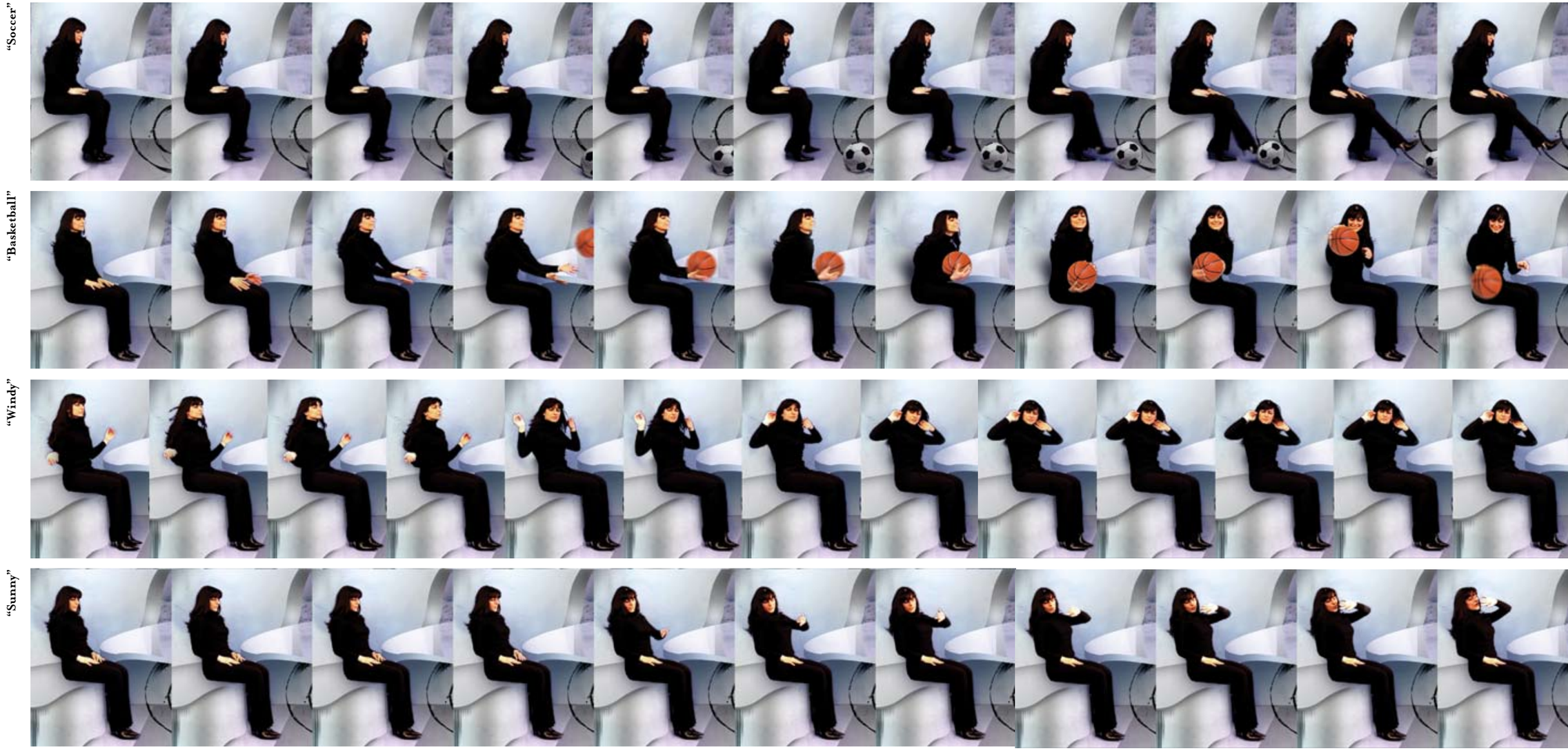
Unforgettable situations like these were some of the most enjoyable experiences during the process of developing MetaLingua. Overall I think Roza became an invaluable asset to the project and added so much life both to the process of creating this project as well as to the actual learning experience students encounter. I will conclude my tribute to Roza with the famous MasterCard format - renting a video camera - $400, renting a lighting kit - $100, seeing Roza perform – [absolutely] priceless.

Roza's response to the user's interaction with the word "HOT"

A playful process of filming the future associative response to the word “WINDY”

Roza’s initial interpretation of the word “HOT”.

Roza's behavioral responses to user interactions with a series of vocabulary words



Both of these sequences - **“Hello”** and **“I’m cold, please pass me my hat”** - rely on gesture in order to demonstrate the given concept.

## THE NEW LANGUAGE

Because the last two versions of my case study suffered from my lack of Spanish language and culture, I switched from Spanish to my native tongue, Russian. The goal is to use my knowledge of the language supported by personal experiences with Russian culture in creating a meaningful educational environment.

## PLAYFUL LEARNING EXPERIENCE

We start our experience in an empty room. Roza, our main character, is standing motionless in the middle of the room. Her pose is somewhat of an awkward one as if she is paused in the midst of motion. We move our mouse and she walks in the same direction as our cursor. Noticing the correlation, we are intrigued. We move the mouse back and forth, Roza moves with it. As we realize that we are affecting the environment, the relationship between ourselves and the interface begins to build. However, the interface seems too simple; it now only consists of Roza in front of an empty wall. Moving our mouse to the left of the room suddenly causes a flower tree to grow. We move the mouse away from the tree and it returns to the ground. Should we click on it? We listen to our curiosity and we click. The tree bursts out a series of words, and these words are now part of the interface. What are these words? What can we do with them? We click on the word "ЗЕЛЕНЫЙ" and Roza pronounces it. Since the flower tree is the object that seemed to spawn these words, we try dragging that word on top of it. Suddenly, the closest flower to where we dropped the word becomes green. We make a mental note that the word "ЗЕЛЕНЫЙ" must mean "green". We are pleased; we just manipulated the elements within this environment and caused the interface to change. Soon, we find ourselves playing with the other words and causing the flowers to change color. As we interact with the words, Roza pronounces them, smiling. What if we gave her a flower? Would she react? We drag one of the flowers towards her. "СПАСИБО", she says, as she takes it with a smile and a nod. "You're welcome", immediately comes to mind.

We try moving the mouse to the right of Roza. A large clock face starts to reveal itself in a similar, almost secretive, way. It is apparent that the clock has no numbers on it. Clicking on the clock produces more words that are now mingled together with the first series. As we can see, the level of interaction, while fairly simplistic in the beginning, becomes increasingly complex.

What is our next possible choice of action? Judging from the previous visual responses we received from the flower tree, we try to drag the new words on top of the clock. Do these words stand for numbers? We drop the word "ОДИН" onto the clock and it eases back to its original location. We continue to play, and suddenly one of the words snaps onto the clock reflects the number "1". We realize that matching each word to its appropriate location on the clock face will produce a similar result.

As a supportive mechanism to our learning by association, all words and objects within the space are related. For example, when we drag the word "ОДИН" onto the flower tree, we witness that all the flowers, but one, disappear. Similarly, by dragging the word "ЗЕЛЕНЫЙ" onto the clock we cause it to change its color to green. These dynamic transformations encourage us to experiment more. Our choices of interaction are motivated by our curiosity as well the positive


An Introductory scene in MetaLingua. Roza is our interactive guide, conversation partner and entertainer.


A changed environment in the Introductory scene as a visual response to user interaction.



reinforcement we receive when we perform certain actions. Sooner or later we begin to associate the words with what they represent. Through continuous interactive play, intuitive or random guessing transforms into conscious choice. We make subsequent choices of action based on previous visual, emotional and contextual responses from the system.

**INTERACTIVITY**

The interactivity present in MetaLingua goes beyond pointing, clicking and observing. Rather, each scene is a unique interactive engagement that draws us into the environment. Interactive discovery takes place on many levels, from the formal interaction of the system's objects and pieces, to the social interaction of users and fictional characters, to the cultural implications that objects and characters have. The user links unfamiliar words with visual elements and reveals their meaning. In some cases, we sit back and watch a story unfold. Playing with MetaLingua, we often find ourselves surprised at what is taking place. For example, when we accidentally drag the mouse over one wall, it rips as if it were delicate paper. The digital transforms into the tactile, appealing to our natural senses. Layer by layer, we rip the interface and reveal new objects that we can interact with. The active process of revelation of the new material stimulates the active construction of new knowledge. An interesting transformation happens at this point of interaction – our curiosity subconsciously changes from sensory (desire to rip the interface) to cognitive (desire to reveal new information).

MetaLingua supplements our curiosity to interact with the many mysteries embedded within the system. For example, a live parrot is present in almost every scene and serves as a metaphor for repetition. Interacting with the parrot causes Roza to repeat her pronunciations, and helps us comprehend unfamiliar sounds.

In some cases, when we are slow to respond, the cursor transforms into a hint. A good example of this is the introductory scene. By rolling over the walking Roza, we notice the cursor change into a miniature version of her sitting, indicating the action that will take place once we click on her. Occasionally, we have to resist our impulse to click and instead try to comprehend the scene, utilizing our newfound knowledge and language skills.

Throughout MetaLingua, learners constantly influence the interface. They see it grow and evolve into something different, something that they have a part in creating. Most interactive media experiences train the user to act immediately and expect instantaneous responses. There is rarely time to observe, experience, and reflect. We are a twitch speed generation that absorbs and discards digital information instantly. An experience with a surreal environment like MetaLingua helps us put aside our preconceived notions about interactivity. Rather than utilizing interactivity as a mere tool meant to transform us from one scene to another, MetaLingua uses interactivity to allow for experimentation and play. Via experimentation and play we discover new relationships between words and objects, and construct meaning from seemingly abstract concepts. Interactivity allows us to learn by association.



## VISUAL FORM

The interface of MetaLingua is far from traditional language software, lacking the typical menu bars, drop downs, input fields and buttons that link to linear content usually titled Chapter 1, Chapter 2, etc. The visual form of MetaLingua is a careful juxtaposition of photographic objects, handwritten and digital typography, film, animation, sound effects and spoken word. These representations of real life entities exist within a digitally drawn surrealistic environment. Supporting the way real linguistic content appears in surreal situations, the visual interface plays upon this dichotomy.

Visually and conceptually, the interface of MetaLingua resembles a theater stage where nothing is constrained but the width and height dimensions. Flexible and visibly unstructured, the interface flows in line with our explorations of the environment. Through interactive play we discover the visual elements hidden within MetaLingua. These elements resemble theater props – they are communicative devices that help our understanding of the material; they exist backstage [the database] and are brought in only when needed for a particular purpose. In MetaLingua, the learner, becomes the director of the play [pun intended] – responsible for affecting, manipulating and rearranging the visual form of each scene. These are the interactive responses.

So what is the role of the visual responses of MetaLingua? As a result of our interaction, the visual responses we receive from the environment directly shape our construction of knowledge. They help the learner draw meaning from both abstract and literal forms. The learner forms these new ideas based on previous life experiences. The cinematic language aids the formation in multiple ways – through gesture of the human character, through emotion exuded in the video, and through human behavior of Roza evoked by the interaction. For instance, in the introductory scene when we drag the word "ПРИВЕТ" onto Roza, she raises her hand and waves at us. Drawing from previous experiences of what the gesture of waving means to us, we come to a realization that she is saying "Hello". To continue our association of word to concept we can drag the same word onto a book. It responds by opening up its pages. While this associative concept is more abstract than the action of waving, the combination of responses from abstract and literal visual form aids our construction of meaning.

What is not immediately obvious to the learner is that at any given moment of playing with MetaLingua, the available visual elements directly correspond to the underlying curriculum, changing dynamically according to what linguistic topic is currently covered. The secretive manner in which the objects appear on stage carries its own magic powers – it appeals to our sensory curiosity, encouraging us to continuously play. The objects themselves are metaphorical representations of the current topic that help us learn by association.

The surreal nature of the visual form is perhaps one of the most important characteristics of the interface as it stimulates the learner's curiosity to interact with the environment. What is it about surrealism that affects our perception and evokes our curiosity for continuous exploration? Surrealism is often described as "an ironic transcendence of multiple realities through their juxtapositioning" **(Bennington, 2000)**. Even if we disregard the visibly surrealist style of the interface, the mere conceptual integration of the cinematic language which


In this activity, students can explore the Cyrillic alphabet through active experimentation and interactive play.

depicts real human form, a digitally composed synthetic environment, and embedded photographs of real objects and locations, exemplifies this definition of surrealism. The MetaLingua environment expresses this juxtaposition, and plays with multiple realities, mixed media, visual contradiction, ambiguity, and time/space alteration. The environment also reflects a fundamental element of surrealism – "the rediscovery of hidden and suppressed, but very real, worlds" **(Aitken, 1998)**. Moreover, in surrealism, the process of discovery is incredibly visual, entailing complex relationships between the perceiving "eye" and the perceiving "I" **(Bennington, 2000)**. Unique juxtapositions of multiple realities in MetaLingua intentionally elicit an active response from the learner, engaging him/her in the experience.

### CULTURAL FORM

The fluid structure of the transparent interface correlates to the notion of Russia as a somewhat unstructured entity. I designed the interface to behave like Russia. My decision reflects the notion of cultural references as an aid to our learning of a new language. A supportive factor to this decision is my desire to add another layer of playfulness to MetaLingua.

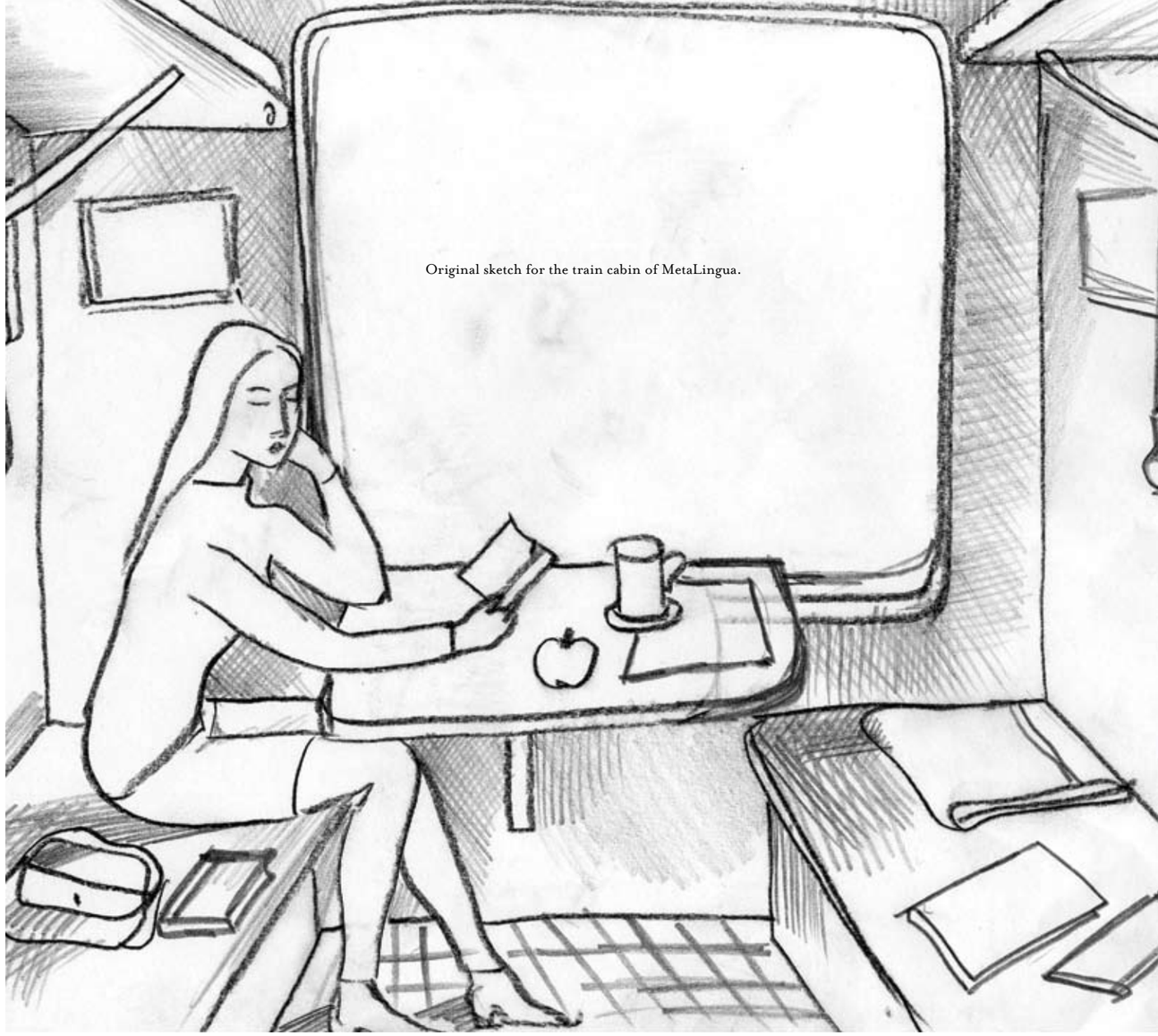
How does the interface behave like Russia? From first glance, it seems unpredictable, obscure and cold, but through your interactions it becomes responsive and human. "Russians respond with a human approach, and they can be kind and helpful once a good interpersonal relationship has been established. This is the key to understanding the Russians" **(Richmond, 2003)**. While there are no specific instructions embedded within MetaLingua that clearly describe the relationship between the interface and the nature of Russia as a culture, by prolonged interaction with the system learners begin to understand the cultural connections on a subconscious level. In order for learners to take away conscious knowledge of these connections, the cultural nuances are woven into the dialogues with Roza.

### A METAPHORICAL JOURNEY THROUGH RUSSIA

Being able to communicate in a foreign language is a far more complex task than familiarizing yourself with a range of vocabulary words. Breaking the language barrier in context of a human conversation is one of the most significant milestones in the process of learning a foreign language. What becomes a major challenge for me as the designer of MetaLingua, is figuring out a way to teach complex linguistic content by association. I wanted to create a new module that accomplishes this goal.

### MAKING ROOM FOR CONVERSATION

One specific idea for this module – a train ride through Russia - seemed to offer the most potential to support my approach to teach a language by association via playful interactions within a culturally based environment. This ride goes beyond traveling through Russia as a geographic landscape; it is also a metaphorical ride through Russian language, its rich culture and extensive history. The "locations" we visit range from major metropolitan cities like Moscow and St. Petersburg to destitute rural areas; the train might visit cultural subjects such as the Russian Constructivism; on occasion we can even travel inside someone's home to deal with the linguistic and cultural topic of a Russian family. Such concrete and sometimes abstract locations are visible through the window of our train cabin.



Original sketch for the train cabin of MetaLingua.

Our journey also becomes a social experiment; - throughout the ride we have conversations with Roza, our fellow passenger. This concept opens up a wide variety of linguistic opportunities; the conversations can cover a multitude of themes – ranging from basic greetings, nationalities, family, occupations, sports, weather and clothing, to topics like history, art and theater. Each conversation correlates to the curriculum while its complexity increases in tune with the learner's ability. MetaLingua observes and evaluates the learners' responses and guides them into the right direction, whether presenting the same material in an alternative way, or increasing the depth of conversation.

This module incorporates micro-level goals that help to sustain our interest in play. During the train ride, we choose the destinations of our interest. Our participation in a question-and-answer dialogue with Roza, allows us to advance from stop to stop until we reach that destination.

**EMOTIONAL INVOLVEMENT**

A particular layer of interaction, only partially explored in previous renditions of my case study, is the emotional aspect of social interaction. During the conversations, we influence the emotional state of Roza. What becomes interesting is how with each scene our relationship with the screen changes. By having control over the environment, particularly Roza's mood, we often feel personally accountable and responsible for what is happening.

Constant control over the environment, however, is not always required for visual, spatial, temporal, or even contextual transformations in MetaLingua. By halting interaction, there is still room for emotional expression of our character. Roza may be surprised that we stopped interacting with the elements in her world. On occasion she might try interacting with words and objects by herself, subtlety clueing the learner in.

Emotions, however, are variable and impulsive psychological properties. A simple definition of an emotion states that it is "a mental state that arises spontaneously rather than through conscious effort and is often accompanied by physiological changes; a feeling: the emotions of joy, sorrow, reverence, hate, and love" **(dictionary.com)**. If we try to avoid conscious effort, then how do we design an emotional system? Design implies a conscious effort that cannot be avoided. Let's restate the question. How can our character truly feel something in a preset environment? While Roza's individual emotions are true and human, they are not spontaneous; rather, they exist in a set of recorded clips that reside in a database of MetaLingua. The timing and order in which we see her emotional responses, is pre-programmed based on each specific interaction.

Does the artificiality of Roza's responses impede our experience? Because we have a direct influence over her emotions through our actions, such reciprocal form of communication mimics a real human relationship. While each action causes a particular reaction, the emerging relationship is not fixed in a non-linear system like MetaLingua. Our choices of actions, coupled with the underlying curriculum, guide the direction and the scope of this relationship. The unpredictability of the relationship that results from interactive play adds a layer of surprise to our experience. It is through this collaborative effort that the spontaneity of human emotion takes place.


Inside the train cabin. Students can explore a series of vocabulary words that describe types of weather.

## PLAY AS EXPERIENCE

Essentially, to play with MetaLingua is to experience it – to see the environment, to touch the objects, to hear the sounds, to feel multi-layered emotions about the emerging outcome, to communicate with the onscreen character, to bend time and space, and to alter one's thinking. Unlike the clear mathematical algorithms that make up the architecture of MetaLingua, the experience of play is more ambiguous and difficult to pinpoint. The nuances of the actual experience will vary for each individual learner. They might even change each time the same person plays with the environment.

When these experiences are relevant to the curriculum – they become another supporting device that helps our learning by association. For example, at one point on our train ride through Russia, we have a conversation with Roza on the topic of weather. In one instance, when we drag the word "ХОЛОДНО" on top of her, she begins to shiver. The longer we hold it, the more dramatic her shivering becomes. Soon the word "ОЧЕНЬ" appears next to "ХОЛОДНО". What does it mean? Is that an adjective to describe the degree of how cold Roza feels? If we continue to hold these words, we might eventually see a hint of frosting on her hair. We soon realize that through these words we affect her physical state, causing her to experience extremely cold conditions. Inevitably, this influences our own experience of play. Since we made her uncomfortable, are we uncomfortable? Perhaps the feeling of coldness will reach us on a subconscious level. In this example we associate our sensory experience with related linguistic content. Participating in a memorable experience helps us remember the educational material that is associated with this activity. Next time we come across the word "ХОЛОДНО", we will remember Roza's shivers.

Identifying the qualities of play learners might experience in each scene becomes a useful method to explore learning by association to its fullest potential. The challenge for me, as the designer, is that the experience of play is not something I directly create. Rather, play is an emergent property that arises when a learner engages with MetaLingua. What I create are the rules and the structure, the environment and the internal system behaviors, which learners will inhabit, explore and manipulate. It is through these actions that the learner will experience play. By directly designing the elements that make up MetaLingua, I indirectly shape the learner's experience.

## PLAY AS SIMULATION

A quick and affective method of learning a foreign language is for the student to completely immerse in the environment where the target language is spoken and the cultural setting serves as a stage for this immersion. Often such direct experience is not feasible, possibly due to high cost, danger, inaccessibility or lack of time. As an alternative, achieving similar results may be viable through a simulation.

**What is a simulation?** A simulation is any attempt to mimic a real or imaginary environment or system **(Alessi & Trollip, 1991)**. Educational simulations are designed to teach someone about the system by observing the result of actions or decisions through feedback generated by the simulation in real-time, accelerated time, or slowed time **(Rieber, 1996)**. MetaLingua simulates real human conversations in a culturally based environment. It is designed so that the scope of the dialogue expands as the learner is ready for it. Continuous play with the elements allows the learner to test their newly acquired ideas and linguistic concepts in a safe and easily accessible way.



## PLAY FOR LEARNING

Current language software assumes that the system should guide the learner where the software becomes an electronic teacher. My approach in MetaLingua emphasizes learning more so than teaching. What is it that makes an effective learning environment? Rieber defines it as a space where the resources, time, and reasons are available for students to nurture, support, and value their learning of a limited set of information and ideas **(Rieber, 2001)**. MetaLingua is a model of experimentation, distributed control, and conversational exchange rather than a system guided by a sequential curriculum fully controlled by the teacher. Learning in MetaLingua is based on curiosity and interest as opposed to relying on specific rewards and threats. The learner shares control with the system, through dialogue rather than conquest – a dialogue that the learner initiates.

MetaLingua does not impose a prescriptive sequence of activities or topic. Rather, it responds to the learner's interactions with specific, consistent, context-sensitive functionality. It allows the learner to initiate a dialogue and responds by generating unpredictable emerging effects and provides suggestions for further experimentation. MetaLingua is a learning environment that gives students autonomy, responsibility and flexible choices for their learning.

The constructivist principles are seamlessly woven into this iteration of my case study. By exploring linguistic content based on association and avoiding direct translation, the students construct their own knowledge, testing new hypothesis against real-world situations. By focusing on the experience of the user/character interaction, the system emphasizes process rather than product. By providing a non-linear, user-driven access to a wide curriculum, it promotes student-directed, student-centered learning. Through multiple representation of linguistic content allowed by the digital medium, MetaLingua accommodates different learner styles and strategies.

MetaLingua also encourages users to try new learning styles by recognizing their interactive behavior, their successes, as well as the mistakes they make. If the learner is experiencing difficulty in understanding the material, the system introduces supplementary visual and audio clues as well as customizes the interactive behaviors to reflect a particular learning style.

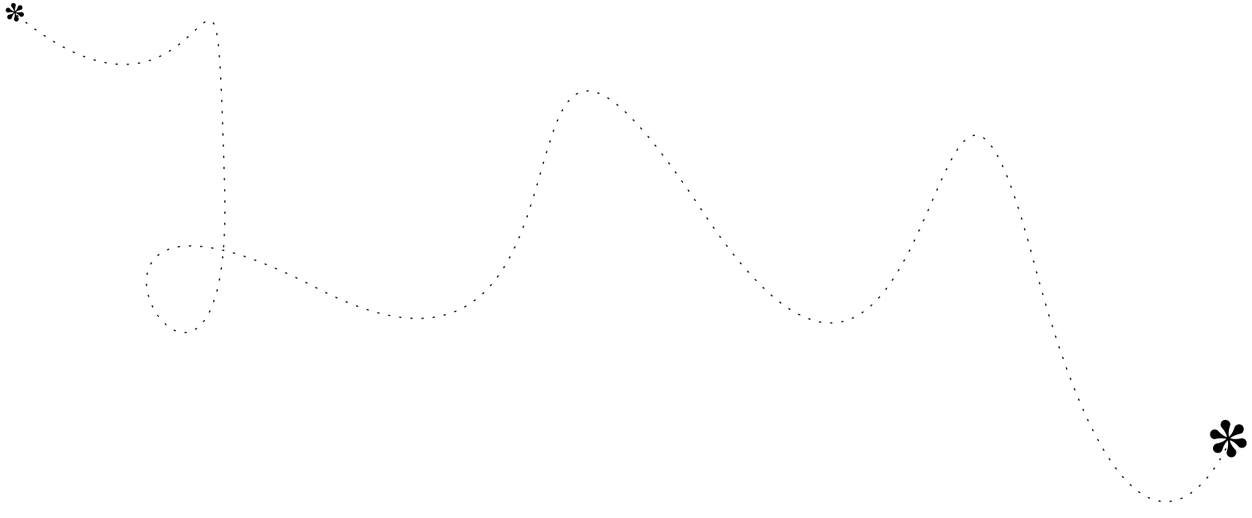
One of the most important principles of learning in an interactive system is co-construction where learners feel like active agents (producers) and not just passive recipients of information (consumers). In a digital learning environment it is crucial for the student to feel that their actions and decisions are not just the designer's actions and decisions. Rather, they should feel they are co-creating the world they are in and the experiences they are having. MetaLingua exemplifies this principle in a way that students feel empowered to reveal new information, to induce emotive and behavioral responses from the character, to experiment and play with the material interactively, and finally, to manipulate, affect and change the visual form of the environment. Thus, the experience of play becomes different for each student; learning becomes an active process of constant participation.

Deep learning in an interactive environment requires an extended commitment which is powerfully invoked when

learners are able to take on a new identity. This allows them to become heavily invested in the experience. In MetaLingua, particularly reflected in the Train module – the learner takes upon the social role of a train passenger, participating in increasingly complex dialogues with the virtual human character. The character herself is so intriguing that she becomes a magnet for curiosity-driven continuous interaction that triggers deep investment in the learning experience.

In order for learning to occur, the challenges within the system should be pleasantly frustrating in a way that a learner feels at the outer edge of their competence. Thus, new challenges always seem difficult but approachable. MetaLingua adjusts the challenges and gives feedback via the visual and emotional responses which indicate whether or not the learner is on the path to success. Moreover, MetaLingua provides well-ordered problems to learners; the initial challenges within the system seem relatively easy but are used to demonstrate the "rules of behavior" of the system in order for the learner to apply the same rules to harder problems in the future.

MetaLingua is a system of exploration, discovery and most importantly – play. It is an experimental approach designed to challenge traditional language teaching methods by utilizing playful interactivity for educational purposes. Perhaps this method is not meant to work for everybody. Those, however, who are willing to experiment with MetaLingua, might begin to view language learning with a child-like attitude and become more receptive to the new language. Willingness to experiment requires intriguing targets of experimentation. MetaLingua offers a multitude of uniquely responsive elements to interact with in order to reveal new information coupled with opportunities to affect, manipulate and change the unusual environment. Curiosity-driven interaction causes these alterations to the system which in turn promote student's interest and willingness to continue the process of meaningful experimentation and play, which, as I have showed, results in **learning**.



* Conclusions

# 07

# Conclusions



If I were to visualize my thesis study as a whole, it would take the form of a ladder, a shape which implies that in order to advance to a higher point, each step becomes a necessary element that helps one do so. My case study, comprised of three phases - LingoTown, SurreaLexis and MetaLingua, was fueled by continuous research, inspiration and experimentation, and became increasingly complex over time. One of the most important lessons I have learned while developing my thesis is the extensive value of process. If I look back at my original idea "to introduce a complex subject such as a foreign language via a playful, interactive, digital system", - then all three stages of my case study, in one way or the other, have attempted to accomplish this goal. To my advantage, the emerging questions, feedback, problems and successes which evolved from each iteration, led me to consistently challenge myself and create new ideas, to push my thesis work in directions that I never envisioned in the beginning of the process. I started with a concept for a game (LingoTown), then proceeded to transform the project into a self-driven exploratory system (SurreaLexis), only to then recognize the importance of goals as they relate to student motivation, and I concluded my thesis project with a prototype for a goal-oriented exploratory system (MetaLingua).

## EMERGED THEORIES

**What are the key findings of my thesis? What are some of the ways they can extend to other fields of study?**

**01. Interactive play as a method to teach concepts by association.** When students are given facts or lectures in a traditional classroom, they risk becoming passive recipients of information. Instead, let them construct their own knowledge through relevant, motivating, exploratory, and interactive experience. Let them discover the right answers through interactive play. Let them find connections and relationships between concepts, objects and their meaning, application, possible outcomes, strategies as well as dangers of use. Involve students in active experimentation with a responsive system that unfolds according to student's individual curiosities and interests. What is important in teaching by association via interactive play is the deep relationship between concepts and their representation. If a student recognizes a particular connection of concepts through interactive play, chances are the relationship may be too abstract for a student to easily grasp. In such a case, supplementary modes of interactive association need to be provided. Introduce your topic with simple interactive procedures; let the student get a feel for the responsiveness of the system. Then increase the level of complexity so that the tasks become pleasantly challenging, but not frustrating.

**02. A cinematic approach to interactive teaching.** Incorporation of interactive video into your system can be particularly applicable to fields of study where human presence or a form of social interaction is needed for learning - psychology, sociology, history, communications, business, human resources, etc. Create human characters that are engaging and unique, but also relevant to the material. They should intelligently respond to all user interactions providing continuous feedback according to a set curriculum. Additionally they can serve as visual aids to the interaction, leading students in the right direction. In an educational system, you can also use cinematography to tell your story which should fit your specific curriculum. A cinematic approach to interactive teaching should not be limited to only using humans in your interactive videos. Moving objects, dramatic events, visual effects, close-ups, unique cuts and juxtapositions, can help to represent your educational material in the most appropriate and engaging way. Motion itself can become a useful tool for guiding interactivity and to evoke cognitive and sensory responses from students.

**03. The role of authorship, student autonomy and control in learning.** The ability to affect and manipulate the digital environment via interactive play becomes another aid to effective learning. Students should feel that their experience is their own and not entirely preset by the creators of the system. Your system should evolve together with the student, expanding dynamically to correspond to the student's growing body of knowledge. Control is shifted from the teacher to the learner, requiring active student participation rather than passive assimilation of the material.

**04. The role of curiosity in interactive learning.** When designing educational interactive environments, it is important to acknowledge curiosity as a key aspect that leads to student motivation. How do you make your users curious? My solution was to utilize visual and conceptual uniqueness. However, the exclusivity of your system needs to be guided by and be relevant to your curriculum. Find intricate ways to integrate real content with artificially created environments that evoke curiosity, whether through interesting juxtapositions of concepts, simultaneous usage of multiple modalities, intriguing interactive behaviors, or charming virtual characters. If the students are curious, they will be motivated to passionately continue their exploration within your system.

**05. Full integration of play and educational content.** Play should be fully integrated into your curriculum. Oftentimes, edutainment software covers up the learning with a reward of play. Learning should be in itself an enjoyable and satisfying experience. Your job is to seamlessly interweave it so that it becomes one with play. For example if you design a system where students get an apple for each correct answer - your system elements are not fully integrated, because play relies on external rewards. On the other hand, if students are able to manipulate their apples to come up with a perfect algebraic equation - your system elements are fully integrated with the curriculum, and interactive play becomes a major part of the learning process.

## POSSIBLE APPLICATIONS

What are some of the possible applications of this approach?

In **math** for example, one could teach equations in algebra, theorems in geometry as well as functions in calculus through interactive play. One could design a digital system where students experiment with, manipulate and alter a given equation, theorem or a function, while observing the dynamically changing visualizations of results. Rather than memorizing the correct way, they associate their actions with the outcome, thus actively discovering the meaning and implications of various mathematical concepts. It is also important to design these visualizations in a way that is intriguing and relevant to the material.

Interactive play can also become an invaluable tool in teaching **science**. In **chemistry**, for example, a simulated series of chemical reactions can be staged as responses to user interactions with various elements. This gives students the ability to experiment with materials outside the lab in a safe and playful way. An application capable of providing the students the needed visual feedback at home can greatly improve student learning inside the classroom since it better prepares them for the real chemical reactions. Also, in a chemistry classroom, the teacher would rarely allow experiments that would possibly result in an error or danger. In a digital system, students would be free to participate in experiments that could serve as valuable lessons applicable in real situations. Similarly, experiment-based systems grounded in interactive play can also benefit the fields of **physics** and **biology**.

Another possible application could be in teaching **music**. Students can digitally play with musical notations constructing and deconstructing them - dynamically composing a piece of music. Rather than memorizing the notation, they could drag and drop them onto a musical instrument which responded with an appropriate sound. Because the experience of play and learning is fully integrated, they would learn to associate the sound with a sign that represents it quicker and more effectively than through mere memorization.

The methodology of teaching by association through interactive play, particularly aided by the cinematic language, can also be applied to the study of **psychology**. For example, students can connect various psychological conditions, such as phobias, depression, and anti-social behavior, among others, to humans represented by interactive video. They can digitally place these human characters in a series of situations and observe their behavioral and emotional changes. What if they were also able to manipulate each situation to help that particular problem? What if students could dynamically change certain background information about each human character, such as adding a “divorce” or another life-altering event, and witness how that affects their condition as well as their behavior in a given situation? In these scenarios, students actively participate in the process and have full control over their interaction, their experience and their learning.





## FINAL THOUGHTS

My process of iteration, transformation and innovation does not stop with graduation. Through further experimentation, I hope to expand upon my existing prototypes and develop a complete system for teaching a foreign language based on interactive play. My other wish is that new media designers, developers, and educators who come across this thesis, will recognize the value in my work and apply the principles of playful interactivity described here to newer endeavors.

Creating this thesis was a challenging and exciting journey, requiring hard work and commitment. My reward, however, is not the final product. Rather, my most immense satisfaction comes from the fact that during the process, I was able to experiment, explore, discover and play. Through these actions I learned. This thesis is a living proof that playful learning is a worthwhile pursuit.

* Appendix

# 08



## RETURN TO START

I began my thesis exploration in the spring of 2003. Emerging from research and investigation of my existing work, I tried to identify several areas one of which would eventually take shape as my thesis study. At this preliminary stage, I was able to point out a common thread throughout these areas of interest, - that was my goal to provide a unique and memorable user experience, particularly as it relates to the digital medium.

Consequently a question arose – what constitutes a unique experience? Judging from memory, some of the most remarkable experiences I have had existed in the analog world. Some of the more significant factors that I can recognize from those experiences were the tactile qualities of the physical presence as well as a complete psychological immersion into that experience. I began to wonder what cultural, sociological and psychological factors play a role in deciding whether a particular event, digital or not, was worthy of experiencing? What is the difference of how these factors affect our experiences in the analog world versus the digital? What sociological or psychological issues arise in the digital medium or are perhaps eliminated? How can I translate the factors that are responsible for providing a memorable experience from the old medium to the new?

These questions were a starting point to my thesis study. Inevitably, questions produced ideas. Ideas produced more questions. While this book serves as a detailed record of the exciting journey that followed, I also wanted to share the preliminary ideas for my thesis exploration.

play
psychology
open source
visual language
education
creative self-expression
surrealism

### DADA, SURREALISM + INTERACTIVITY

This project would entail the development of a series of digital applications that play with the ideas of DaDa and interactive surrealist games.

### LINGOTOWN

The idea is to introduce and teach a complex subject such as a foreign language in a playful, interactive digital learning environment.

### INTERACTIVE PSYCHOLOGICAL EXPERIMENT ON HUMAN BEHAVIOR IN CYBERSPACE

In this project I would explore the concept of trust. The idea is to develop a series of playful digital objects that are already so familiar to users, that they have certain preconceptions about these objects. I would then attempt to break those preconceptions by introducing interactive and visual behaviors integrated into those objects that are extremely shocking and unexpected. Examples of such objects could be a calculator that outputs something other than numbers, a popular news website which presents news from a hundred years ago in a modern and technically advanced way. Another example of a surprise would be altering the behavior of a computer mouse which would move the mouse pointer in the opposite direction of the actual mouse movement, etc.



## PRELIMINARY THESIS IDEAS





### VISIO : NONVISIO

For this project I would attempt to visualize some of the non-visual aspects of certain digital systems such as the process of emailing, the auction on eBay or a virtual romance.

### MELTED HYBRIDS

This system would allow children to experiment with digitally "melting" familiar objects such as a newspaper or a favorite toy into a can of virtual paint, and then providing them with the ability to "paint" with the melted object on a digital canvas. The results, I suppose, could be quite fascinating.

### VISUAL HISTORY BLANKET

The idea is to create a virtual space in a form of a grid, divided into thousands of cells. Each cell would be placed in a grid according to history, geography, field of study, etc. This would be a web-based application where users could upload images according to the provided categories. The system would place an image in the appropriate cell. As time passes by and more images get uploaded, the result is going to be a vast, scrollable visual quilt of history.

### INTERPOLITICS

For this project I would design a virtual environment where all the visual and interactive behaviors are consistent with particular political ideas, for example communism or capitalism. The goal is to introduce complex concepts of a subject as well as to simulate and enhance the understanding of the analog experience using new methods.

## A FEW IDEAS THAT NEVER MADE IT...

### DYNAMIC PERSONAL AD

An activity designed to teach a wide a range of foreign language vocabulary through writing a dynamic personal ad with a portrait. The student has to describe himself, his hobbies, his look, his personality traits - all in the target language. The system would then respond with a caricature image depending on the answers. Once an image is produced, it can dynamically change depending on the student's alterations to their answers. The questions could include: How old are you? What is your occupation? What is your favorite color? Are you male or female? Young or old? Short or Tall? Skinny, Medium or Big-boned? Hair Color? Eye color? Nationality? Hobbies? Do you wear glasses? Are you shy?

### THE MAGNET IDEA

This activity would present the student with a range of vocabulary words and unique filter tools that would behave like magnets - "nouns", "verbs", "adjectives", "feminine", "masculine", "neutral", "food items", "clothing", etc. By dragging the magnets around the screen, they would either attract or repel words according to the word's meaning/form. The objective of this activity would be to guess a meaning of each given word through interactive experimentation and discovery.



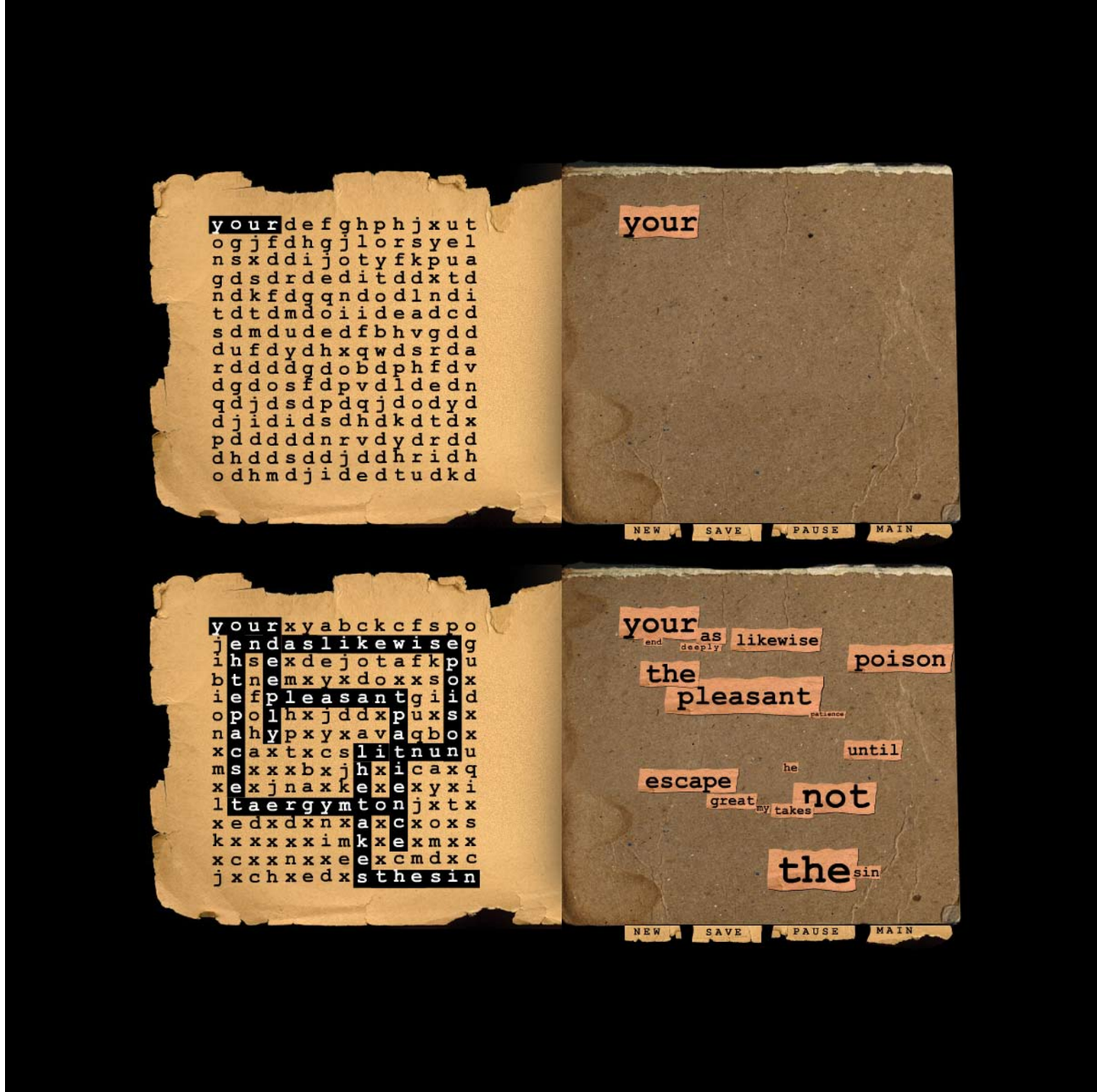
Here, I present some of the projects I have completed during my time at DMI. Looking back, I notice a common thread in all my graduate work - the overarching theme of play. I consider these projects the platform for my thesis study.

## MY OTHER PLAYFUL PROJECTS

**Poetry of Enigma**
**Emotional Book**
**Encyclopedia of Typography**
**Mashed**
**PhonOpera**
**Crossword**

## POETRY OF ENIGMA

The first project I worked on at DMI examined the topic of location, particularly as it relates to new media. Throughout the course of the project, my concept evolved from creating a task-oriented gaming experience in a form of a labyrinth to a more abstract representation of the concept of location through automatic poem creation.






**EMOTIONAL BOOK**

The assignment for this project was to create a concept and prototype for a "New Book" using various elements of new media. My analysis began with the exploration of ideas for a book that would not be possible in a traditional book medium. The eventual solution was to create a book with a personality. While the user is interacting with the pages, the book actually responds to the user's activity.

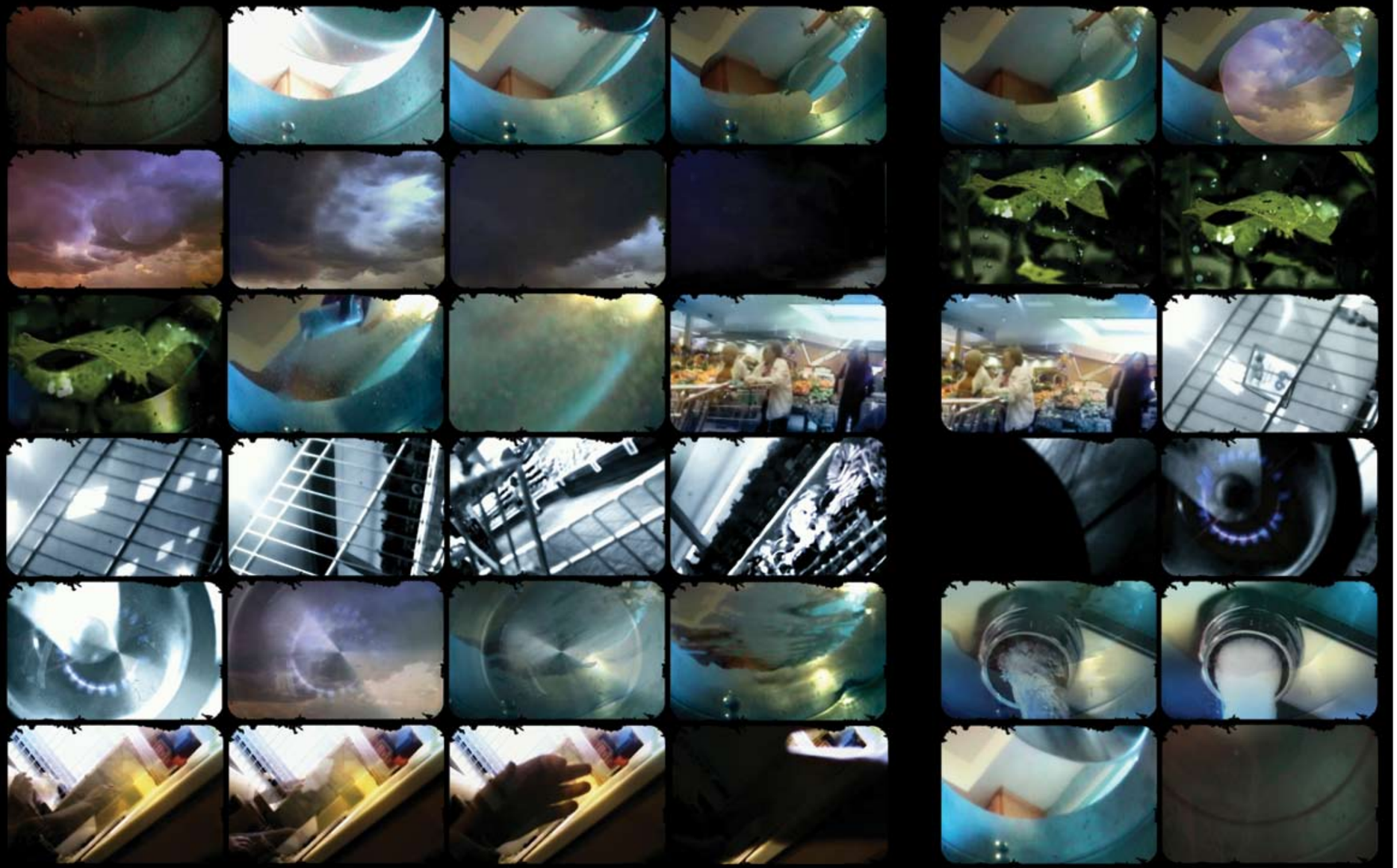
Some of the highlights of the process were the correlation of human emotions/feelings/behaviors to those imagined for a book, as well as the alignment of these human behaviors with various interactive behaviors expressed through typographic elements. On certain occasions the book is cranky, not allowing you to read it thoroughly, in others it becomes embarrassed of its own content where a given page begins to blush. One one page, the book is very quiet, only letting you see one word at a time. In another instance, the book feels ostracized; this feeling is expressed through a draggable sentence where the last letter is unlike any other letter in form, size and color and does not quite follow the action of dragging.

"Emotional Book" project deals with issues of interactive play, emotional expression in new media, as well as topics of authority and control over this medium.

## ENCYCLOPEDIA OF TYPOGRAPHY

The Encyclopedia project was my first dive into the realm of playful interactive learning. When I started thinking about this project, I inevitably began to analyze existing digital encyclopedias. To me, encyclopedias are meant for exploration and discovery. What if we were able not only to discover new information, but also somehow be able to apply our newly found knowledge?

For the purpose of a deeper investigation, I decided to narrow down the given objective to create a holistic encyclopedia of the arts to the subject of Typography. In addition to a convenient way to access needed information, I incorporated a range of activity labs into my encyclopedia where the user can play with as well as manipulate the data in order to promote active and participatory learning.





**MASHED**

The given objective was somewhat comical - to represent a dramatic transformation of vegetable in a cinematic visualization. What we are witnessing is a tragic fate of a potato, being boiled for a Thanksgiving dinner. Moments before the potato is boiled, its life flashes before its "eyes". The entire film is shot from the perspective of the potato.

**Instructions for those wishing to videotape an entity from "inside the pot":**

1. Go to WalMart and purchase a cheap aluminum pot.
2. Using a saw, cut out the bottom of the pot.
3. Take a glass plate and place it inside the pot.
4. Glue the plate to the bottom of the pot.
5. Take 2 chairs and place them so that their backs are facing each other.
6. Place the pot over the chairs in a way that it's "hanging" in space.
7. Position your camera and tripod under the pot.
8. Fill the pot with water.
9. Hope for the best.

**PHONOPERA**

The film visualizes an emotional glimpse of a relationship through a phone conversation between a violin and a piano. The idea of masks can be viewed as a metaphorical representation of hiding one's identity while talking over the phone. I created the soundtrack by mixing a range of pieces from classical solo violin and piano compositions.


**CROSSWORD**

This short film is a cinematic visualization of the Alzheimer's disease achieved by exploring various digital and analog manipulations of printed typography. Using a stop-motion technique, I sequenced more than 2000 still images to create a flowing cinematic experience. To add the nuance of confusion and the feeling of being lost, elements that accompany this disease, I edited the soundtrack so it plays in reverse during the "dream" sequence and forward during the "reality" sequence.

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