The Implications of a Theory of Play for the Design of Computer Toys

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"Action in the imaginative sphere, in an imaginary situation, the creation of voluntary intentions, and the formation of real-life plans and volitional motives — all appear in play and make it the highest level of preschool development. The child moves forward essentially through play activity... Play [can] be considered a leading activity that determines the child's development." Lev Vygotsky, *Mind in Society* (pg. 102-103)

1. The nature of play

It is easy to underestimate the importance of play for the child. Play is ubiquitous in a child's life as well as culturally universal. It is also difficult to overemphasize the differences between what play is for the *child* and what the adult *supposes* that play is for the child. Many adults regard a child as an "adult-in-training" (Sutton-Smith, 1989) and suppose that the child at play either is "merely playing" (i.e. doing something trivial and unimportant) or is "practicing" (i.e. modeling future adult roles). While play doesn't entail the same import and consequences as many adult activities, and while imitating an adult is an aspect of some genres of play, these observations about play miss the importance of play *for the child.*

In this position paper, we draw on social theory to create a model of the child's world of play and use it to understand the importance of play activities on a child's individual and cultural development. As an adult, we can all look back on play during our childhood. What we want high-tech content providers to do is to remember what it was like to play as a child. From this perspective, the designer can recognize the importance of play.

We also stress that we don't believe that all children experience play the same way nor that all cultures have the same play activities. One of the most salient differences in the way that children experience play differently has to do with differences in gender. There are well-documented and persistent differences in types of play and manner of play between boys and girls (Turkle and Papert, 1991; Schofield, 1995; Kafai, 1996; Sutton-Smith, 1986). Additionally, play activities vary across cultures (Sutton-Smith, 1986). The existence of gender and cultural differences strengthens our central thesis: in play, the child becomes emancipated from immediate circumstances, those in a particular gendered and cultural context, and becomes able to envision alternative circumstances, those in an alternatively gendered and cultural context. It is the *options* for gender and cultural norms and values that a child can experience in play.

2. Play is more than make-believe

The child is immersed in play. For the child, play is the medium through which everyday life is experienced. Like air or water, play is the environment through which and with which the child experiences her world. For the content provider, this means that the imagination of the child is readily available (the "willing sus-

pension of disbelief"). It is important to stress, however, that it also means that it is the *child's* imagination which is available, not what the adult may believe the child to be imagining. During play, the *child's* experience of the world is transformed from an immediate experience to an imaginative experience. The nature of the child's imagination and its immersive character leads to two considerations for designers and content providers of play events.

First, it is practically impossible to determine which play activities will capture and hold the child's imagination. We have all been surprised by the child who ignores the expensive new toy because she is enthralled with its box. Apparently it is the box that sparks the chld's imagination. Second, it is impossible to determine when play events start and stop (Sutton-Smith, 1989). The context of a play event is much broader than may appear to the adult observer.

A social theory of play can provide insight into the phenomenon of immersion and imagination in play. From within the play event, beginning around three years old, when the child starts to experience unrealizable desires, play mediates these desires by allowing the child to create an imaginary world where those desires *can* be met (Vygotsky, 1978). Since childhood is a time of learning to defer gratification and desire, the child spends *most* of her time in her imaginary world. However, it is also important that the child is always immersed in a *local* world. In other words, the child's imagination is constrained by the boundaries of the cultural world in which the child is playing; a child can't invent an imaginary world characterized by cultural experiences untraceable to the child's own world (although the child's ability to use imagination in this way may become more developed in later childhood).

The social theorist studying play and the content provider enabling play can learn a lot about play by looking at real play activities. For example, in our Western culture, "tea party" is a common game among girls in early elementary school. The child with limited control over the adult world can become a "mother" playing tea party. By taking up the "mother" role, the child realizes the desire to have increased control over real world events. By looking at how girls play act as "mothers," it is possible to learn quite a bit about how girls think and feel about themselves and others in their world. It is important to notice, however, that "real" mothers in most Western cultures, including the American culture, don't themselves participate in "real" tea parties. Why do their daughters? What is the relationship between an imaginary and socially non-existent practice like the tea party and the playing child's social transformation?

It is less the content of the specific play activity which matters than the "rules" (implicit or explicit) of the activity which mediate or link the child and her imagination to the outcomes of the play activity. It is this mediating function which allows the child to develop, while playing, important cognitive, social and affec-

tive skills that the child will use later as an adult living in a particular, for example Western, culture. Of course, the child in another culture — Bali, for example, or Iran — might not play tea party. Instead, that child might chose a different play activity with different roles and different rules.

Vygotsky introduces the notion of the "zone of proximal development of play" (we shorten this to the ZPD of play below) to describe the model in which the developmental progression of the relationships among the child and the play event is represented. The child "enters" the ZPD of play by participating in a play activity. During play, the child interacts with others in the ZPD, some of whom will be more competent and some less, and uses play objects (see section 3 below). The relationships among the children, the individual child's imagination and the objects are *always* governed by rules within a ZPD of play, and these rules will mirror the social values of the culture in which the ZPD is embedded. It is the *rules* of the tea party activity which make it a transformative event. The child will become able to learn the rules of a particular activity as the child becomes developmentally able to do so and as the rules are taught to her by another person (child or adult). As the child becomes competent in the activity, the child is transformed *by* the activity. In this way, the child learns the rules of her society. As long as the rules of the tea party mirror social values such as women's conversational styles and attitudes about women's social roles, tea parties will continue to take place (and girls will continue to play Barbies).

3. The progression of play and the development of thinking

There are always objects in the ZPD of play. Vygotsky calls these objects "pivot objects." A "pivot object" is the object with which the child actually plays (the "play tool," such as the cup, saucer and tea pot in the tea party activity). The nature of a particular pivot object turns out to be quite different, depending on the age of the child, the "location" of the play activity in the ZPD of play (determined by the relationships among the child, other people and the rules of the activity) and the nature of the larger culture in which the play activity takes place. It is primarily the *differences* among pivot objects which can be observed, analyzed and extrapolated into principles of software design (and it is the potentially different uses of available pivot objects which a child makes use of in imagining alternative circumstances).

For our purpose of elaborating on how an understanding of play is important for design, we will stress two intertwined characteristics of pivot objects: their "representational" nature (i.e. how they take on meaning for children) and their "pragmatic" nature (i.e. how they are used by real children in real play). *Play facilitates the development of the child's ability to mediate between thinking (representation) and creating (pragmatics or use).* It does so in three ways.

First, all objects take on a meaning independent of their meaning as objects. In the tea party activity, a cup is not just a cup, it is part of a tea set; in checkers, the round, red plastic tokens are "men" on a battlefield.

Second, the older child comes to be guided by the meaning in the (imaginary) situation and not by the objects in it at all. For the youngest children in play, the pivot objects themselves set up the boundaries of the play activity. A tea set will be used for a tea party. For the older child, the situation will determine the perception of the pivot objects. For example, the round, red piece of plastic can be a "man" on a battlefield but it can also be a poker chip.

Third, the rules anchor play behavior and determine the shape of the imagination possible during that activity. As the child matures, the rules become more abstract but also more explicit. Also, as the child matures, the rules place more (not fewer) constraints on behavior. The characteristics of favorite play events change over time as the child matures. In Vygotskian terms, play transforms from being an "overt imaginary situation with covert rules" (like a tea party activity) to a "covert imaginary situation with overt rules" (like a checkers game).

4. Play is always learning

What a child does in play is *under the control of the child*, not under the control of the adults in the child's life and not under the control of the activity designer. But that doesn't mean we shouldn't care about the activities we give to children. What it does mean is that it's important to understand what play is and is not. Play is neither trivial nor an activity supplied by adults to "train" children into the adults they should become (but which the adults around them are not). Play is a complex social phenomenon which serves the crucial social function of nurturing a child's imagination and ability to envision and create alternative social and material circumstances.

All play is learning. *All play has educational value as a means of developing complex thinking and acting.* Let us emphasize our claim: all play, irrespective of genre, including Dungeons and Dragons, Toy Story Animated Storybook, tea parties, and board games like checkers, have educational value.

Play can be systematically deconstructed into elements which can serve as building blocks for educational software activities and game design; looking at play activities from a Vygotskian point of view can highlight cognitive and social relationships that a designer can drawn on. The tea party activity and the game of checkers promote social values and attitudes, albeit somewhat sexist and imperialist ones. The child playing tea party is using the tea party objects to practice a socially defined role, practice imposing a meaning on an object (a meaning which is still largely determined by the object itself), and practice sustaining a type of social interaction, a type often associated with women (cf. Tannen, 1990). The child playing checkers is also practicing a socially defined role (to design and carry out a battle plan), practicing imposing a meaning on an object (in this case, the meaning is almost completely arbitrarily imposed on the object), and practicing winning or losing (the battle). In checkers, the child is sustaining a type of moral reasoning, a type often associated with men (cf. Gilligan on Piaget, 1982).

5. Play as a cultural event

Play is a mirror of a wider sphere of cultural value. This is true of both tea party and checkers. In the tea party activity, the child creates an imaginary world in which she participates in "polite" conversation and in an activity of the "leisured" class. There are conventionalized conversational topics to refer to such as the day's events, and conventionalized conversational rules such as to avoid serious and disturbing topics, compliment the hostess, apologize for spills, and tell an amusing story, but the content is flexible and mistakes are tolerated and accommodation and compromise are stressed. (Other examples of this kind of open-ended play activity include image creating software, simulations and activity centers.)

Checkers, on the other hand, is an example of a play activity called a "game." In checkers, the child also creates an imaginary

world. In this world, she can act out a battle scene in which the object is to conquer the opponent's territory by subduing all his or her men, again rewarding competition and maneuvering for tactical advantage. The rules are fixed and inflexible and violations are sanctioned, supporting a highly rationalized understanding of moral reasoning. (Other examples of the game kind of activity include most card and board games, adventure games and Dungeon and Dragon games.)

Our work on play, and our understanding of play as an immersive and culturally-embedded event, has led us to an understanding that designing play activities requires more than merely "tacking on" desirable elements to the design process. Play tools created and used by children in play *always already* serve the prevailing culture's cognitive, affective and social values.   Play tools will continue to serve these values because that is their nature. Socially responsible design requires an awareness of these existing values and a willingness to change them.

6. Play is a kid thing

Play is not what adults think it is because adults have developed beyond remembering how immersed in play they were as children. In this position paper we remind adults about the role play played in our lives. Play was serious, consuming and ubiquitous but paradoxically fun. Through play we developed as individuals and learned how to fit into our particular societies and cultures. As we, as adult high-tech content providers and designers, persist in designing computer toys for our children then we must be aware of the consequences and implications of putting them into the context of children at play. The toys we give children may affect them differently than we intend. So, the next time you observe kids at play see their play as it really is — a kid thing.

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