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**KEYNOTE: “ENABLING REALITIES”**

## ENABLING REALITIES

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I suspect that you invited me to speak because of a seventeen-year-old project called Purple Moon. I'm guessing that some of you see what has come to be called the "girl games movement" as a first step toward compassionate design for people who had been left out of the "computer revolution". I think you know that computer games were an incredibly important gateway for kids to become interested in computing. For those of you who have heard me speak about those times before, I apologize for the upcoming short journey on the Purple Moon trail. I'm also going to share some personal experiences with Purple Moon that I haven't discussed in public before. And then I want to go beyond old times and speak more directly about the subject of this conference.

First, the Purple Moon journey. After about 17 years in the computer games and interaction industry, I was hired in 1992 to work at a lab called Interval Research. It was funded by Paul Allen—the "other" Microsoft billionaire—with the stated purpose of inventing things that would create as many new opportunities as the invention of the personal computer. Paul hired David Liddle—an Xerox PARC veteran, entrepreneur, and all-round Renaissance Man—to lead the lab.

Shortly after I was hired in 1992, David and I discovered that we shared a concern about girls lagging so far behind boys in their use of computers. David asked me to lead an effort to understand why and what could be done about it. As a mother of two daughters, I had seen the computer lab at their school, where boys held sway and very few girls got into the action (although some of the boys had my daughter Hilary writing code for them—but she was quite a unique little girl). My daughters were exceptions to the rule because they grew up with computers—their parents worked in the industry. Later, when the Web was ascendant, we had an "open computer" policy with them. When they stumbled onto something pornographic or nasty, we trusted them to just say "ewww" and get out of there. And they did.

A side note on movies here. When my kids were 8 and 10 I started showing them movies that I thought were important. I showed *Emerald Forest*, a film they often request when they come home, because I wanted them to become engaged in environmental issues. We also watched *American History X*, a film about skinhead culture. I wanted them to be aware of it. Along the way, we watched *Priscilla Queen of the Desert*. After the film, my 8-year-old Brooke came out to me. "Mom, I want to be gay." "Okay, sounds good," I said. "When did you make your decision?" "Well," she said, "I want to wear those clothes." I assured her that she could wear those clothes no matter what gender identity she might choose.

Back to Purple Moon. David hypothesized that boys were more interested in and less intimidated by computers because of the familiarity they had gained with technology through videogames. This, in turn, gave boys an advantage in education and later in their careers. I agreed, and we began to plan our research.

A central challenge for doing good design research is to figure out what right questions are. For example, we might have asked, "why don't girls play computer games?" But first-order answer to that was too simple: since its inception (when arcade games calved off from the pinball universe), the computer game business was funded, managed, designed by and for young men, with vanishingly few exceptions (Carol Shaw was probably the first female video game designer, working at Atari in the

late 1970s). Computer hardware and software were sold in male-oriented spaces. The computer game business was about as “vertically integrated” as possible.

Another question might be, “what kind of computer games would girls play?” But the small numbers of women and girls who played adventure games, *Pac Man*, and first-person driving games provided murky clues about what girls and women might like. The question we finally converged on was, “how do girls play?” Not only would that give us ideas about play patterns and interests; it would also give us information we could use in other domains.

We began with secondary research and “expert” interviews, from marketing types to soccer coaches to academics. Guided by our initial findings, we spent about a year and a half interviewing over 1000 girls between the ages of 8 and 12 in 8 US cities. We used an interview method called “dyads” where you screen for a particular sort of person you want to interview and then ask them to bring their best friend. You get a two-fer: both kids respond, and they tend to keep each other honest. We also interviewed 200 boys and 100 parents. As will happen with human-centered research, our interviews led us to insights that weren’t exactly about the central research question. We were learning about social problems, cultural issues, familial issues; for example, many of our respondents—especially in Indiana, my home state—reported abuse at home. All we could do was to suggest to those girls to report their situations to a trusted teacher or school counselor, who would then be required to report it to the state.

It was remarkable to us how little geography mattered in the way girls described the social structures in their schools. Our findings, as reported to us by kids, almost exactly matched the model that had been created by our partners Cheskin Research in their study of trend movement through teen culture. Cheskin mapped it in terms of orientation toward peers and toward adults. The vast majority of our interviewees described a hierarchical structure where the “popular kids” are sought after and actively used exclusion as a tool. These kids—called “visibles” in the Cheskin model—were typically the athletes and beauty queens, physically attractive, above average in wealth, academically mediocre, and very high-status. They typically over-performed heterosexual gender roles. There were also the “normal” kids who tended to do better in school and tended to dress and act more conservatively, the “nerds” who typically had high affiliation with adults, the “isolator” kids who ignored the rules and often got into trouble, and the independent and spunky kids who challenged authority, including the authority of the popular group. This latter group—called “explorers” by Cheskin—were actually the trend-setters and music-makers in teen culture. They tended to present alternative gender constructions in their clothing and demeanor. In other words, we were learning first-hand that the social cliques and personal experiences of kids were very similar no matter where in the US they were living. Later, we would base our character designs on these broad sociological outlines.

A striking finding for me was that the girls we interviewed, no matter what their social status, shared a sense of *inevitability* about what would happen in any given situation—a party, a football game, a casual conversation, a moment at the locker. Often they had backed themselves into social corners with their own self-images. “Oh I just *knew* she wouldn’t like me,” or “I figured it would turn out this way,” or “there was just nothing I could do.” This was when I began thinking that something good for these girls might be a kind of emotional rehearsal space for them to experiment with making unaccustomed choices, trying out different versions of themselves. That, I thought, might put a dent in the sort of resignation I was hearing in their stories. I had seen my oldest daughter go through a period of learning that she had *choices* about who she was going to be, how to act, what to say, what to do. In retrospect, this seemed like the moment when she got “over the hump” of early adolescence and began to develop resilience.

Gender identity almost never came up forthrightly in our interviews. For one thing, we couldn’t figure out how to ask about gender construction directly—it would be very hard to put the question

in understandable terms, and it would probably freak out some of the kids we were talking to. But we got clues. In one interview, a girl showed up with her best friend wearing a fluffy dress, delicately crafted curls and lots of ribbons in her hair. We asked if she liked to do anything “tom-boyish.” “Well,” she said, “not really. I’m very feminine.” To which her friend added, “yeah, and you’re the top-ranked pitcher in Girl’s Little League.” We got a lot of things about gender stereotypes. For example, in one round of interviews we had a table filled with various toys and games and we asked kids to choose what they’d like to play with. I’m remembering a 7-year-old boy who headed right for the little action figure of Deanna Troi from *Star Trek: The Next Generation*. Then he screeched to a halt, pointed at the figure and said, “wait a minute—is that a *purse*?!” We assured him that it was a tricorder. “Oh, well, OK then, I mean she can shoot, she can fight, she’s one of the team.”

The boy was responding to gender signaling as an aspect of the toy—evaluating whether a male-gendered person could play with the female-gendered action figure if she had a purse. This led us to conduct a few groups of interviews to explore gender signaling in toys. We made a bunch of toys with mixed up gender signals. A pink fuzzy truck was off-putting to the boys but the girls accepted it, so pink furriness overcomes truck-ness. A diary re-labeled as a War Journal with a bullet hole in it: boys rejected it (a diary is a diary is a diary), but some girls were curious about it. So diary-ness overpowers war-ness—another step in the hierarchy. We took the cover of Ecco the Dolphin and gave the dolphin bloody fangs. Boys wanted it; girls were horrified. So bloody fang-ness overcomes dolphin-ness, and so on. There was one toy hack that nobody liked. We called her Battle Hair Barbie. Boys hated the hair and girls hated the gun and everybody was freaked out by the empty blue-eyed stare from under the helmet.

After our research interviewing was done, we analyzed our findings and transformed them into what you might call design heuristics. We came to the conclusion that we really did know enough about gender and play that we could actually do a pretty good job of designing *for* girls. We thought that we could meet them where they were and make some positive social interventions. And our experiences talking with them reinforced our care—love, even—for these wonderful people. We thought, let’s just do this thing. We knew we weren’t going to be able to wedge anything into the game business as usual, so it seemed the best thing would be to eventually start a company ourselves, and we called it Purple Moon.

At that point, we began searching for a development group that would make a good partner for us. We talked to some great folks, especially Stuart Cudlitz at Colossal Pictures. Eventually we found a woman-owned and mostly female team with some good things to show from the multimedia side. Because they seemed like-minded and competent, we hired them. It did not turn out so well. The problems weren’t with the contributors but rather culture and politics of the organization. My first clue that we were mis-aligned was when the group started excluding men from some of our meetings, saying that it needed to be a woman-only environment. At one meeting where some men from the Interval and Cheskin teams needed to attend, the men were asked to stand in the loft.

There were other clues that we were not on the same page. After several dust-ups about my having direct contact with artists and writers, I was asked to move into a little office with a door between it and the studio. This was positioned as an honor, but in fact it was a cage. I can’t figure out to this day why I agreed to do this. I think I let myself be cowed by an intense desire to be accepted as a feminist. Eventually it came to the point where I was supposed to knock when I wanted to come *out* of my office. After some weeping and a whole lot of stress, I pulled myself together and reminded them that I was for all intents and purposes their *employer*, and that they could not continue to treat me like an alien. I propped open the door to my “office.”

Meanwhile, we continued to hire great talent—Pamela Dell in writing, Grace Chen in Art—we even hired a great artist on the basis of his profile in the *SF Chronicle* as a great tagger. Still, strange things

were happening. One day, I hired a project manager for software development who was a man. Our separatist developers were up in arms, accusing him of sexism and homophobia. I shook my head and took these concerns to our new hire. “Wow,” he said, “that’s incredible. Does that mean I can wear my earrings now?” Of course, he was gay.

The artists had given wonderful shape to the characters that Pamela and the rest of us dreamed up. We did a good job on racial and ethnic diversity in the cast as well. The characters were wonderfully unique and recognizable. One week, I had to be out of town for a conference. When I came back, the main character drawings on the walls had been revised. They all looked like very short, angry women. This led to another confrontation, including talk about race. Finally, we agreed to use the census as a guide to the racial make-up of the cast and put the old character sheets back. But there was moody muttering about “quotas.”

Finally, after a disastrous demo that was already several months late, I decided that we had to find new developers if we were going to have any chance of success. Our first partners had made great contributions in art and design, but they were not up to the development piece. We hired another house easily enough, but it took about a year to disentangle things with our first partners. That year was the year that we would have beat *Barbie Fashion Designer* to market.

One cause of this failure was that we didn’t do adequate vetting on the company we originally hired. But some of what was wrong could only have been discovered through time and experience. We did launch in 1997, got the two games into the top 100, had a great reception at E3, and started building a real fandom. In all, the company lasted 3 years, dogged by Barbie and the Pink Machine. Finally, when we were about a quarter away from break-even, our investors decided that the grass was greener on the internet side of the fence. There were no limits to valuation if you weren’t manufacturing, warehousing, and retailing products. Quite suddenly, just after we had shipped our 8<sup>th</sup> game, our Board shut us down. We had to lay off 40 people on payday. Miraculously, we found a way to give everyone their salary that day. And even after we had posted our “goodbye” message on the Purple Moon website, nearly 300 girls registered through the back door.

It’s worth remembering that Purple Moon was part of a larger “girl games” movement that included companies such as Her Interactive, GirlGames, GirlTech, Silicon Sisters, and American Girl. At the end of the adventure, around 2000, Mattel had acquired many of the properties and companies that were the “girl games movement” only to eliminate them as competition to the Barbie model of the universe. This was, in many ways, a battle between the rigid, traditional gender construction as enforced in the world of Barbie and the growing awareness of activist female game designers that this form of cultural oppression called for an activist response.

The Purple Moon experience was essentially about gender in more ways than I had imagined in the beginning. The research enlightened and enlarged the space we were working in, but the gender conflicts and stark cultural mismatch in the workplace crippled us. Our commitment had always been to meet girls where they were, to conduct and stand by serious ethnographic research. Although they gave lip service to the research, in fact our original developers’ commitment was to an ideology and identity with which they were comfortable. That is natural, but it was not the bargain we had made.

Life went on. I stayed home for a year, recovering my health and my self-respect. I also wrote a book about the experience, called *Utopian Entrepreneur*. When I get fan mail from former fans (who are now twenty-something), I send them a copy of the book. It’s about our ideas and our ideals, and also about how the sausage was made.

All of this experience can be seen as background for a larger question: **What does it mean to design for someone?** I think that most of us know what it is to design for ourselves. We are creating enabling realities—worlds in which we can comfortably be ourselves. For many of us, this impulse comes from finding that the places designed by the AAA game industry are *not* places where we can comfortably be. It's important to add that those young men in the early days of games were also designing *for* themselves. They were designing games they wanted to play. It just so happened that their designs worked for a large segment of the population. As they gained momentum, some began designing *for* the company, the label—or *for* wealth and fame.

In 1996, I was designing for girls whom I *wasn't*. My girlhood was massively different from theirs. Luckily, I had the funding to do research that was both deep and broad. For example, if I had relied on my own experience, I would have been woefully wrong about the *Secret Paths* series. I would have remembered keeping snakes and turtles and fantasizing about taking care of more animals and even people. What I found in my research was that girls in their “secret garden” 25 years later wanted to be illuminated by faeries and taken care of *by* animals. They weren't particularly interested in sharing access to their garden by anyone, even their friends. What a mess I would have made if I had designed to my own experience! It would have been just one more gender stereotype reified—that girls like to nurture things.

How can we design *for* someone whom we are not? What does that mean? Although it may seem strange, I want to take a side trip to the Enlightenment. The *Encyclopedia* principally developed by Denis Diderot and Jean d'Alembert in the second half of the eighteenth century embodied the spirit of the Enlightenment. In his preface, D'Alembert describes the principal aims of the *Encyclopedia* as to “set forth as well as possible the order and connection of the parts of human knowledge,” and “to contain the general principles that form the basis of each science and each art.” The core belief of D'Alembert and the other luminaries of the Enlightenment was that ***people might continually improve the human condition through our own efforts.*** While believing in the primacy of sensation and observation as how we know the world, the *Encyclopedists* advocated a methodology that submitted these observations to reason as well as ethical consideration. Well, OK then. This is how the humanist movement was born.

Diderot, d'Alembert, Rousseau, and all the others involved with the *Encyclopedia* were designing *for* a population that went far beyond themselves. Their aim was a ***cultural intervention***: to change the minds of regular, God-fearing folk so that they had the resources and intention of making their own lives better by their own efforts. That intervention led to a renaissance in thinking and making, touching the sciences as well as the humanities and arts. It was a great act of empowerment. I don't mean to reduce the Enlightenment to this one effort, but it serves to exemplify this incredibly important historical moment and the course changes that it made. Those Enlightenment people were designing *for* people, with love and respect and the goal of the betterment of humankind. They had a notion of the Good (e.g., Knowledge) that they were determined to propagate.

Today, we find partnerships and collaborations doing the same kind of good. A great example *Never Alone* by Upper One Games, launched by the Cook Inlet Tribal Council in Anchorage, Alaska. The game is an enabling space for Alaska native people. Its development group included Alaska Native storytellers and artists as well as game developers at E-Line Media in New York. The intent of the game is also to design for a sort of gentle *cultural intervention*, giving non-Native players a journey through the cultural terrain of Native Alaska. It will be the first in a series of World Games to be created using the same methodology.

Both first- and second-wave Feminism had similar intentions: to make *cultural interventions* that would change the status and power of women the world over. It was manifest in literature, political action, arts, and the individual sense of self. But even in the first wave, feminism splintered around issues of

temperance and race. In the second wave, one of the many splinterings involved feminists taking sides about matters of sexuality, leading to groups that identified as “anti-pornography” and “sex-positive.” Another split, fairly closely aligned, is the war between those who had come to be called “gender feminists”—to generalize, people who believe in gender purity for a variety of reasons—and equity feminists”—that is, people who are more focused on that there should be equality of opportunity, status, etc. among the genders. There have been more splinterings before and since then, as I’m sure you are all aware.

I remember attending the first California Women’s Music Festival in Yosemite, where ropes were set out to separate people: smokers, drinkers, people with mastectomies, people with mastectomies who were either smokers or drinkers, *ad infinitum*. I was attending the festival with my lover, a documentary filmmaker. She was making a movie about the women’s music group “Alive.” The afternoon before the festival began, we were hanging out in our tent when we heard motorcycles start roaring into the campground. We became curious and wandered down toward the general gathering area. One of the new arrivals was ranting about the “childcare provided” policy of the festival. She insisted that only girl children be allowed in the venue, and that little boys should be kept in a locked cabin. Without any forethought, I found myself giving this woman my left hook. Yes, ladies and gentlemen, I took that woman DOWN, although as an inexperienced fighter, I dislocated my thumb in the process, and I ran away really fast. Later, we told the women in “Alive” about what had happened. The next day, they entered the concert area carrying children on their shoulders, both boys and girls. A lot of motorcycles roared away. I know of no particular relationship between motorcycles and separatism; that’s just what happened.

Last year, I was asked to present something about Purple Moon at the Feminists in Games conference in Vancouver. As it turned out, a contemporary entrepreneur in the “girl space” shared my session with me, so I cut down my presentation on the fly and reviewed what I thought were some of the high points of our research. Among those were some scientific findings about so-called “brain-based” differences between males and females in navigation styles, mental rotation and pattern matching. If these differences existed, no matter how slight, we might make our games more enjoyable for girls if we took them into account.

During my talk, progressively disgruntled Tweets began to appear; the most horrific labeled me a biological essentialist. This meant that if I was attributing anything to chromosomes, I was offending the transsexual community as well as many other feminists. I read the Twitter feed after the talk and went outside and cried. I hadn’t foreseen this at all. As the weeks after the conference went by, I thought more deeply about the responses from the audience. What I learned was that I had shown real insensitivity to the transgender people in the audience. Samantha Allen had shown merritt kopas’ game “Lim” earlier in the day and it had made a great impression on me. I became a fan. But Samantha was one of the people most hurt by what she perceived me to be saying. I spoke with her about it later, and I think we made some peace. Now, I know a bit more about genetics that would render the offending research to be problematic in terms of the nature vs. culture problem. More of that in a minute.

The shadow of feminist splintering is long. Some feminists still argue vehemently about male-to-female transgender people. Once again a Women’s Music festival takes center stage, this time the Michigan Women’s Music Festival, the charter of which declares that only people who were “born womyn” would be admitted.

Here I come with some science again, which is risky but important. There’s a big problem with that old binary, chromosome-essentialist view. Two X chromosomes as any kind of test of womanhood isn’t even scientifically reliable. For decades, scientists have researched the notion of human chimeras—that is, humans who possess different genomes in the same body. In the classic form, two

or more genotypes arise from the fusion of more than one fertilized zygote in the early stages of embryonic development. In other words, one of two twins absorbs the other at a very early stage in development. You may know of the famous case of Lynda Fairchild from 2002, where blood tests showed that she was not the mother of her children—even the one that a doctor had just delivered. Eventually, more testing revealed that she had two different genomes in different parts of her body, probably the result of early absorption of the cells of a male twin. A chimera may have two genomes that are both xx; they are just different xx lines.

Mosaicism, a relative of chimerism, typically results from mutations within cells within *one* germ cell early in its existence, leading to different genomes scattered in the same individual. Sometimes genomes in one person differ in different parts of their bodies as in chimeras, depending on the origin. A study in Canada in 2012 examined the brains of 59 deceased women to find that the brain tissue of 67% of them contained a Y chromosome, possibly because of fetal cells assimilated from a male offspring across the placenta. These cells evidently may migrate to different organs in the mother and be absorbed.

In the last 10 years, it has become apparent to the scientific community that these genetic mash-ups are much more common than originally thought. In current thinking, about 30% of the human population have some form of chimerism or mosaicism, and that number goes up as more research is done. Some contend that most humans have a degree of mosaicism.

This recent science proves that **a world where XX and XY are the only categories does not exist.** The binary is exploded. Further, it's extremely likely that most genetic chimeras and many mosaics do not exhibit any externally readable signs, and even "cheek swabs" do not reveal the whole truth. It looks like Michfest is going to have to do DNA screenings from multiple parts of attendees' bodies to keep up their so-called gender purity. Even the term "gender purity" is evocative of ideas about "genetic purity" in the ante-bellum south and the Third Reich. Quests for purity like this have always been doomed as science moves forward. Seeking genetic purity is a fool's errand.

I look at the faces in this audience and I see the kind of racial, ethnic and cultural diversity that feminists and humanists often celebrate. We don't insist that all of these bodies and identities be "pure" in either genetic or cultural ways. Our coming together represents an action to collaborate and share knowledge, not to label, shun, and exclude. With "Gamergate" jabbering in the wings, how the hell can we stand together if we keep chewing each other's legs off?

A final note. Most of us recognize that transgender people have been central in the game industry, well before Twine and other tools made game-making even more available. Sandy Stone, who brought up generations of great designers at U Texas Austin. Jamie Fenton, inventor of what would become Macromedia Director. Danielle Berry, born Dan Bunten, who authored *Seven Cities of Gold* and *MULE*—possibly the first collaborative game put out by a AAA game company. These women are my colleagues and my friends, and their influence has been huge.

Danielle was a close friend and colleague of mine, central in the design of Purple Moon. She helped to shape the original research and content. One day, after collaborating for many months, we were having a conversation outside at Interval. At one point, she suggested "dinner is ruined" as a premise for the first game. I replied that that wasn't probably top of mind for 8-year-olds, although 6-year-olds played house fairly often (and the boys who wanted to play were usually cast as dogs). Danielle burst into tears. "I didn't have that childhood," she said. "I didn't grow up a girl." I loved Danielle. I had known Dan Bunten in a past life, but Danielle was a wonderful woman, and she enriched my life in many ways. I was there when she was recovering from sexual reassignment surgery. I saw her pain and her perseverance. Later she would write that she questioned whether she had made the right

choice because it cost her so much. Her children. Her home. And, no doubt, the approval of some of the game designers—male and female—who had once been her colleagues.

People, we are gathered here as persons interested in queerness. What happened to Danielle and what is happening to Sandy and other transsexuals today take me back to 1975 when I came out as bisexual. “You’re nowhere. You’re lying to yourself. You’re on Ellis Island.” Today I’m married to a cisgender male who celebrates my sexuality. What to do with a queer like me? Prejudice hasn’t changed much. But it’s nowhere near as violent and exclusionary as the current pogrom against transgender women.

If we are designing *for* someone—not for a corporation but for a flesh-and-blood person—we have a *duty*—to understand that someone very, very well and listen to our research and our hearts rather than our ideologies and preconceptions. Our duty is to work with *care* and *respect*. We need to treat our colleagues the same way—with *care* and *respect*. This is the part of being a humanist and a feminist that matters most. Let’s stop drawing lines through those who don’t meet the feminist criteria *du jour*. We actually can design and collaborate and coexist with *care*. That is how positive change is made in this world.