The Annenberg Workshop on Games for Learning, Development & Change, Los Angeles, CA, USA (21-22 May, 2007)

The Annenberg Workshop on Games for Learning, Development & Change, hosted by the Annenberg Studies on Computer Games (aka ASC Games Group) took place on May 21-22, 2007, at the University of Southern California in Downtown Los Angeles. Launched in 2003, the ASC Games Group is an interdisciplinary research team at USC’s Annenberg School for Communication that seeks to conduct systematic and innovative research about the influence of game playing on individuals, groups, and society at large. In recent years, a new field of serious games has emerged as designers and developers use gaming for non-entertainment purposes such as education, healthcare, policy-making, and corporate management.

Given the pressing need for theoretical development and scientific research on this topic, the workshop aimed to (1) promote the value of social science for advancing the field of serious games research, (2) summarize the state of the art research on serious games effectiveness, (3) define the problems and opportunities involved in advancing this field, and (4) develop perspectives for future collaborative work. The workshop was unique in that it was truly an international and multidisciplinary event; as more than 70 people from North America and Europe, including around 30 invited speakers, attended the workshop. Not only did scholars provide their understanding of the phenomenon from different perspectives, but industry advocates shared their visions about serious games as well.

Intentionally designed to be rather small-scale but intense, the workshop featured a rigorous agenda to encourage dialogues and discussions on an array of issues. Besides introductory speeches, all presentations were organized into a 3 x 5 grid (see Table 1). The three topical areas included: Learning, defined as the intentional acquisition of skills or knowledge through deliberate practice and training; development, which emphasizes the rather incidental psychological impact of game play on processes of human development; and change which addresses the aspect of social intervention. Within each topical area, three pairs of speakers were structured to address empirical findings, methodological challenges, as well as theoretical assumptions, followed by a talk on applications and concluding comments by the ASC Games Group faculty members.

Introductions
After Tom Hollihan, Associate Dean of Annenberg School for Communication, and Ute Ritterfeld, Director of the ASC Games Group gave welcome remarks, the workshop begun with three introductory sections. Using an analogy of the old Indian tale of the elephant and the six blinds, Ben Sawyer reminded us that as leaders in this young and yet controversial field of practice, we should not allow the same shortsightedness to mislead our understanding of serious games, but that we should be careful to ensure that the descriptions we use and adhere to paint the entire picture of what it represents. As one of the few people who have helped broaden the definition of games, James Paul Gee introduced six properties that at their best allow players to have powerful experiences that compete with real life experiences of control, agency, deep learning, and mastery, for example “games as psyching out how rules can be used for your advantage to accomplish goals to which you are personally and emotionally attached”.

In their effort to answer the question “Can serious games and seriously fun games be one and the same?”, Ute Ritterfeld, Rabindra Ratan, Hua Wang, and Cuihua Shen suggested a serious
games taxonomy, identified fun factors of commercial entertainment games, as well as their plans for assessing the fun factor of serious games.

**Games for Learning**

Both Carole Beal and Debra Lieberman demonstrated positive empirical findings on games for learning, K12 education (Kindergarten through 12th grade) and beyond. Games hold promises for improving classroom learning, with the possibility of increasing learners’ control and linking target content with rich context; but they are also subject to constraints like lack of infrastructure, high learner diversity, and issues with curriculum alignment.

In addressing assessment issues in learning games, Valerie Shute proposed the idea of stealth assessment, which uses new technologies to seamlessly incorporate formative assessments into play to extract ongoing, multifaceted information from learners without disrupting the game experience. In addition, Shute suggested a three-layer (competence, evidence, task model) evidence-centered design. In his response, Gary Bente further suggested to add an adaptation phase (to indicate measures to be taken to adapt task level and/or launch help functions) and consider additional data sources from social gaming and collaborative learning across intrapersonal, interpersonal, group, and contextual levels.

The theoretical assumptions on games for learning were discussed by Art Graesser and Jennings Bryant. They emphasized the relationships between complex learning and emotions (e.g., cognitive disequilibrium, flow vs. boredom, motivation) and the role of several principles for games, such as operant and classical conditioning, cognitive challenge, curiosity, and complexity.

After Michael Zyda demonstrated USC serious games projects designed and produced by graduate students, Lynn Miller and Kwan Min Lee summarized the dynamics and complexities of games for learning and pointed out key challenges and opportunities. One important challenge is to encourage psychologists and other social scientists to study the phenomenon of games and learning by clarifying assumptions, and integrating complex models of people in realistic, interactive, and controlled situations.

**Games for Development**

The development session started with empirical findings of John Sherry, who connected game play across the lifespan to developmental psychology. He furthermore addressed physiological and attentional processes, in that games produce arousal symptoms, and gamers have more attentional resources and faster information processing. In her response, Kaveri Subrahmaniam asked what part of gaming creates arousal, and whether gamers have better attention or better divided attention.

Marco Ennemoser discussed methodological problems and challenges in games for development. By presenting his longitudinal research of media effects on children, Ennemoser suggested that a standard of systematic theory-driven evaluation on serious games should be established which explicitly defines goals and potential of a game, explains the causal mechanisms, investigates additional benefits of the game factor, and addresses treatment integrity issues. A further evaluation was given by the response of James Watt who discussed requirements for causality, problems with experimental and longitudinal studies and moderating variables. As solutions he suggested data mining, simulation and exploratory inductive research.

Concerning the theoretical assumptions of games for development, Elly Konijn and Marije Nije Bijvank proposed a model about how game play influences the identity development of adolescents, and focused on the importance of (often stereotypical) role models offered by video games. In his response, Frank Biocca added to these the importance of properties of the medium, such as hardware -, formal - and content features.
For applications, Albert Rizzo showed impressive virtual reality games for mental health and rehabilitation. In summarizing the sessions on development, Ute Ritterfeld and Andrea Hollingshead proposed a future agenda that focused on identifying areas of development (e.g., cognition, academic skills, socio-emotional skills), theories to explain mechanisms, and methods that capture developmental processes.

**Games for Change**

The serious games for change session started with empirical findings of Yasmin B. Kafai, who addressed the importance of serious games for girls and female player’s participation in the gaming phenomenon. In responding to Kafai, Jeroen Jansz asked specifically: (1) what kind of serious games are games for girls? (2) What kind of social change should games for change address? And furthermore, (3) Do we need new (serious) games, or new ways of playing?

In discussing the methodological challenges of games for change, Michael Shapiro addressed a key concern: the still somewhat problematic issues of generalizability and validity in video game research. Two of the main strategies to use according to him, is to focus on human thoughts and behavior in order to study interaction and to model dynamic processes. The response of Niklas Ravaja further indicated that the use of a large sample of multiple, different games as one stimulus, is helpful to increase the external validity of a study.

Theoretical assumptions on serious games for change were discussed by Christopher Klimmt. He presented a model of how playing serious games designed for facilitation of change may overcome the stable and strongly rooted cognitive origins of undesired behavior. He introduced 15 mechanisms that could potentially contribute to a serious games effect on social change. Arvind Singhal responded to this by posing some critical questions that need to be answered, like: Why are we so focused in theorizing complex social problems in linear, cognitive, and reductionist ways? Singhal also pointed out our tendency of privileging the notion that “we think our way into a new way of acting” when it is often easier to “act our way into a new way of thinking.” To tie back to one of the most crucial elements in games, Michael Cody emphasized the influence of narrativity/story telling and entertainment-education mechanisms on social change and maintenance in his concluding remarks.

The workshop ended with a dinner talk by Stacey Spiegel and a series of his spectacular projects from Interactive Immersion Cinema to Virtual Canada. Spiegel highlighted the learning and challenges of serious games in building a more involving and emotionally engaging media future.

**In sum**

The *Annenberg Workshop on Games for Learning, Development & Change* addressed in great breadth and depth a handful of important issues. The event not only provided the most current state-of-art research on serious games, but also pointed out clear future directions. All presentations, responses and discussions together, emphasized the value of social scientific perspectives and their contribution to games research. The content and set-up provided ample opportunity to elaborate on specific topics, stimulated further discussions and collaborations. The results of this workshop will be published in a book, which will be edited by Ute Ritterfeld, Michael Cody and Peter Vorderer.

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