BEYOND SERIOUS GAMES: TRANSMEDIA FOR MORE EFFECTIVE TRAINING & EDUCATION

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ABSTRACT

Serious games present a relatively new approach to training and education for Defense and Homeland Security. Although serious games are often deployed as stand-alone solutions, they can also serve as entry points into training content that is delivered via different media. The present paper explores the application of transmedia storytelling used by entertainment, advertising, and the commercial game industries to sustain audience engagement with memorable experiences. Transmedia storytelling is the art and science of designing a consistent message that is delivered and reinforced across multiple media utilizing diverse entry points into a narrative to generate audience involvement with content. This approach is consistent with the goals of the Army Learning Model 2015 to deliver training and education to Soldiers across multiple media. Transmedia storytelling also provides a practical framework for developing media-rich training. In the present paper, we introduce the notion of transmedia storytelling, also known as transmedia or cross-media, as related to the use of serious games for training and education. We discuss why the human brain is wired for transmedia storytelling and demonstrate how the Simulation Experience Design Method can be used to create transmedia story worlds and serious games. Examples of how the U.S. Army has utilized transmedia for strategic communication and game-based training are provided. Finally, we conclude with strategies the reader can use today to incorporate transmedia storytelling elements such as Internet, TV, radio, print, social media, graphic novels, machinima, blogs, and alternate reality gaming into defense and homeland security serious game training.

Keywords: transmedia, cross-media, serious games, campaigns, storytelling

1. INTRODUCTION

Games have been used for a number of years in fields such as business and management science, economics, intercultural communication, and military science to expose both large and small audiences to complex dynamics. Military use of warfare board games dates back to 17th century Germany (McLeroy, 2008). Centuries later the United States Army War College was among the first to use networked, multiplayer simulations in the 1970s to refine mathematical models. The first use of a networked multiplayer computer game for training was by the United States Marine Corps. The United States Marines are among the earliest adopters of video game-based learning with the development of Marine Doom, a modified version of Id Software's Doom II, in 1995 (Riddell, 1997). Marine Doom was developed to allow four-person fire teams to train real-time teamwork and decision-making in an interactive virtual environment. Thus Marine Doom was the earliest modification of a commercial entertainment computer game for training and learning communication and coordination—not shooting or killing (Prensky, 2004). Since the late 1990's video games have been used by all branches of the Services for training and education, although most of this adoption has occurred in the last 8 years. These video games are often called "serious games."

Serious games can be defined as the use of interactive digital technologies for training and education in private, public, government, and military sectors (Raybourn, 2007). While there are many definitions for games, most identify some sort of conflict, rules, structure, goals, and uncertain outcomes as salient elements (Malone, 1980; Gredler, 1992; Crawford, 2003; Aldrich, 2004; Salen & Zimmerman, 2004; Bjork & Holopainen, 2004). For example, serious games can include games, role-play, and social-process, immersive simulations for exploring interpersonal development, adaptive thinking, combat tactics, emergency response, diplomacy, governance, health, education, management, logistics, and leadership.

Government use of serious games has grown steadily. The need for effective use of multiple media, immersive simulations, and gaming approaches for Homeland Security and Defense has never been greater. The United States military adopted serious game-based training for reasons that also appeal to many other organizations including reduced cost when compared to the cost for large simulators or live training, reaching digital natives who have grown up with technology, increased motivation to learn (Gee, 2003; Prensky, 2004), and the ability to leverage state-of-the-art technology. Twenty-first Century demands on training and education will extend the use of serious games and game technology beyond current approaches.

Serious game training and education must move beyond standalone solutions toward complete and enduring training experiences. This paper introduces the notion of Transmedia, an approach to emotionally connecting learners to content by involving them personally in training communicated across multiple media. We refer interchangeably to transmedia storytelling, transmedia campaigns, or simply transmedia as the same concept.

2. TRANSMEDIA STORYTELLING

Transmedia storytelling can be defined as crafting a narrative or consistent message (story) across multiple media. According to Henry Jenkins, "A transmedia story unfolds across multiple media platforms with each new text making a distinctive and valuable contribution to the whole" (Jenkins, 2006). It may be useful to consider transmedia projects as "campaigns." The term "campaign" as used in this paper will refer to a coordinated effort to link several media and training approaches to a single idea or theme. The use of transmedia campaigns for training and education is a cutting-edge approach that can help with retention, remediation, and knowledge reinforcement.

Utilizing transmedia campaign strategies, integral elements of a training narrative (e.g. warrior-diplomat ethos, first responder practices, etc.) get dispersed systematically across multiple delivery channels for the purpose of creating a unified and coordinated learner experience. Ideally, each medium makes its own unique contribution to the unfolding of the story. In this way, transmedia is a *system* that conveys a consistent communication message.

When crafting a training transmedia story, a designer can follow a typical framework for telling stories that involves taking the learner on an emotional journey from setting up the situation, introducing a conflict or challenge, allowing the tension to reach a high point or climax, and finally providing an opportunity for resolution (Raybourn & Silvers, 2011). This framework is often used in game design. Games provide players with experiences (Salen and Zimmerman, 2004). These experiences are often identified as being emotionally engaging (Fullerton et al., 2004) although as David Freeman (2004, p. 10) has stated, "you can't just suggest an emotion and assume the player will feel it." Creating true affect in games (as well as transmedia) requires satisfying learners' emotional needs or presenting different opportunities to explore emotions that learners may find appealing to try (Malone, 1982).

Similarly serious games for Homeland Security and Defense training can be interactive scenarios in which the learner is the protagonist of his or her own story. In particular Live Action Role Play (LARP) and multi-player games involve the learner from the first-person perspective. This first person buy-in is also key to transmedia storytelling. When learners are emotionally invested in the story, and in the case of training and education, see themselves as protagonists in their own training story, they not only remember it better, but they also continue to respond to new or repurposed content that is associated with familiar emotional triggers.

In the next section we introduce a new vision for Army training, The Army Learning Model (ALM) 2015 will require games and tools that not only interoperate, share data models, and tell their own unique stories but also deliver cohesive, cross-platform training that is memorable and increases retention. Transmedia provides a practical approach to designing cohesive learning instances that support a larger goal of motivating learners to train anytime, anywhere.

3. ARMY LEARNING MODEL 2015: WHY WE NEED TRANSMEDIA

Last year the United States Army formally identified a learning model to meet new requirements outlined in a Training and Doctrine (TRADOC) document, called the U.S. Army Learning Concept 2015 (Pamphlet 525-8-2). According to Pamphlet 525-8-2, page 3, "although the Army was an early adopter of distributed learning nearly 20 years ago, the program did not fully realize its intended goal of anytime, anywhere training." Army institutional training is still primarily comprised of instructor-led courses that are difficult to modify to meet individual learner's needs (Bickley et al., 2010). However, the Army has not abandoned its goal of anytime, anywhere training.

The ALM is a learning model that leverages personalized, self-paced instruction, and opportunities for peer interactions. The learning model can be best understood by applying Distributed Cognition Theory and the notion of "cognition in the wild." *Cognition in the wild* refers to human cognition as it naturally occurs and adapts in the everyday world—situated in culturally constituted human activity (Hutchinson, 1995). The ALM vision incorporates learner assessment while the learner naturally encounters content and experiences. "The future learning model must offer opportunities for Soldiers to provide input into the learning system throughout their career" as well as account for Soldiers' prior knowledge and experiences (Pamphlet 525-8-2, p. 6). Thus, the learning model represents training the way that people learn naturally—by formal and informal learning experiences in and out of the classroom and across learning platforms, simulations, games, social media, and intelligent tutoring systems.

In order to accomplish the ALM vision, blended, multi-media deployment and storytelling strategies incorporating serious games, immersive simulations, intelligent tutoring systems, virtual worlds, machinima (video or short films made with game technology), mobile learning, graphic novels, motion comics, film, radio, print, and social media will need to be leveraged effectively to motivate personalized, self-paced training and education. ALM presents a very ambitious vision that will require a paradigm shift in Defense and Homeland Security training. ALM training and education can leverage strategies common in cross-

media, or transmedia storytelling used by entertainment, advertising, and the commercial games industries.

3.1 Army Learning Model Use Case

For example, recall the Army vision of a Soldier in 2015 who trains anywhere, anytime. In this use case a Soldier trains in the field, with different simulators, on different platforms, in the classroom, and with her peers (both co-located and distributed). The use of different media allows her to engage in the training from different entry points. Her training is comprised of interacting with one or more of the following technologies: intelligent computer-based tutoring, mobile performance aids, immersive virtual environments, serious games, augmented reality, machinima, graphic novels, peer-generated content, and social media. For instance, she may begin her language and culture training with an intelligent tutor and continue with a single-player scenario on cultural awareness that is delivered via a serious game. She engages in an alternate reality game on cultural awareness with her peers. Later she blogs about what she learned in her journal and shares this information with her team. The conversation about cultural awareness continues on Twitter. She reads about case studies via graphic novel or by watching videos. Her learning is self-paced, collaborative, adaptive, and/or mediated by instructors, virtual mentors, and embodied agents. She creates content, tracks her own learning, and monitors her progress. Most importantly, her training is delivered via a variety of media, making it more dynamic, accessible, and engrossing. Her training leverages best practices and advancements from the commercial game industry. Her training and education is delivered and reinforced via *transmedia*.

4. TRANSMEDIA FOR MORE EFFECTIVE TRAINING AND EDUCATION

According to Mark Long, Transmedia Producer and Co-Founder of Zombie, "We are in a transitional period where our relationship with media is shifting to multiple screens. Our audience is growing up in a digital world. The playing, reading patterns, and habits of young and old are changing as reading extends from the printed page to tablets and to a future of a myriad of diverse devices." (Defense GameTech Keynote, March 2011) As noted by our example above, transmedia supports learning across a spectrum of devices by allowing the trainee to stay connected with training content throughout the day as she interacts with the devices and media to which she is accustomed. While it may not be possible to train all instances of a learning objective with a serious game, or any other technology for that matter, the training that is introduced can nearly seamlessly unfold while content is reinforced by other media. This is a big idea, representing a paradigm shift in the way we think about executing training and education.

To achieve a paradigm shift in training we will need to move beyond serious games as standalone digital learning instances. Current and future training and education realities necessitate a broader vision toward supporting serious game content with storytelling across multiple media to extend learning experiences beyond a single session. Even when learners are not playing a serious game, they can remain engaged with the training content especially if we apply transmedia.

Transmedia can augment serious game-based training because it blends story experiences to achieve buy-in from the trainee by allowing multiple entry points into the narrative, over several media. Transmedia does not imply design control over content—transmedia storytellers must allow learners to co-author the narrative by contributing their own experiences and interpretations (Giovagnoli, 2011). We allow for co-creation in transmedia because we seek to involve the learner cognitively and emotionally. That is to say, transmedia engages the brain and it behooves designers to understand how.

4.1 Transmedia, Emotions, and the Brain

Why does transmedia appeal to us on an emotional level? Why have stories been central to the human experience? Research indicates that it is primarily because the human brain is wired to pick up on messages crafted as stories because we feel real emotions when we connect with content or a character in a story. One potential explanation from LeDoux (1996) is that the brain uses two mnemonic systems to process information. The brain processes information both rationally and emotionally, although emotions about rational content are usually processed by the brain split seconds before rational or logical interventions by the cerebral cortex. The brain's limbic system (thalamus, amygdala and hippocampus) reacts to information by interpreting sensory organ impulses sent by the thalamus to produce an emotion in the amygdala (LeDoux, 1997). LeDoux claims that perceptions (thalamus) and emotional responses (amygdala) always occur first—followed by judgments of like or dislike formed in the hippocampus. The limbic system generates emotional memories that make it easier for us to categorize and remember information. Put simply, LeDoux's research indicates we best remember information presented in the form of a story. When done well, transmedia can evoke emotions that tap into sensations processed by the brain that may motivate a learner to have better retention of and connection to the content even when explored across several media.

5. ARMY GAME PROJECT: TRANSMEDIA FOR STRATEGIC COMMUNICATION

The first use of a concerted transmedia campaign was in 1976 to support George Lucas' "Star Wars." A publishing group was formed to produce and promote all products such as games, movies, toys, websites, cartoons, books, and comics associated with the film (Giovagnoli, 2011). The objective of a transmedia campaign is to create a fanbase that follows the

transmedia experience across different media so as to not miss out on any part of the story.

Transmedia campaigns have also been used for Defense strategic communication in the America's Army franchise. The America's Army first person shooter game was conceived by Colonel Casey Wardynski of the US Army Economic and Manpower Analysis as a strategic communication tool to aid with recruitment, and especially to reach a fanbase of young people who were not likely to have had a family member that was in the US Army. Widely popular since 2002 with millions of fans worldwide, there have been over 26 publicly available versions released. The game is available by free download (http://www.americasarmy.com).

Figure 1. America's Army Real Heroes (courtesy of the Army Game Project).

A successful transmedia example of the America's Army franchise is the Real Heroes program (Raybourn & Silvers, 2011). Real Heroes was launched in 2006 to give the fanbase an opportunity to form emotional connections with real men and women of the U. S. Army who represent elite Soldiers serving their country with valor, courage, and bravery (see Figure 1). Real Heroes have been rendered in the America's Army game and sold as action figures. Players read their biographies and watch videos about how they received commendations from the U.S. Army. Some Real Heroes participate in the Virtual Recruiting Station where they interact with game players who then win bonus honor points for interacting with the Real Heroes (http://manual.americasarmy.com/index.php/Real_Heroes). The Real Heroes make public appearances at NASCAR events (sponsored by the U.S. Army) and other venues promoting the values and ethos of U.S. Army Soldiers.

The America's Army official website offers links to graphic novels (comics) that are available for viewing online or in print. The online versions are available on mobile devices and feature the use of motion comics. Figure 2 below illustrates how a narrative supporting Soldier operations can be communicated via a digital graphic novel (http://www.americasarmy.com). The use of dramatic colors, deliberately spaced panels on the page layout, and emotions on the faces of the characters are all crafted purposely to engage the audience and draw them into the story (McCloud, 1993).

Figure 2. America's Army motion comic (courtesy of the Army Game Project).

The Army Game project also makes serious game applications. Although the game was initially meant for boosting recruitment, it was not long before America's Army Government Applications was formed to develop serious games for training and education. The first application of America's Army for training purposes was developed in 2003-2004 by Sandia National Labs and America's Army Government Applications (a.k.a. Virtual Heroes) for the U.S. Army Special Forces John F. Kennedy Special Warfare Center and School. The Special Forces cultural awareness and adaptive thinking multi-player game was called *America's Army Adaptive Thinking & Leadership* and was used to practice negotiation skills, cultural awareness, leadership, and adaptability (Raybourn et al., 2005). There have since been a number of follow-on Government applications used by the Secret Service, U.S. Army, and other combatant commands. Currently the Army Game Project is led by the U.S. Army Software Engineering Directorate located at the Redstone Arsenal near Huntsville, Alabama.

6. CREATING SERIOUS GAMES AND TRANSMEDIA CAMPAIGNS: SIMULATION EXPERIENCE DESIGN

Simulation Experience Design is a methodology and framework that can be used to create interactive stories, transmedia campaigns, and serious games. Simulation Experience Design treats game design as the creation of a *system of experiences* that exist within an emergent training context that the designer strives to reinforce throughout game play, as well as before, between, and after game play has concluded (Raybourn, 2007). The Simulation Experience Design methodology (Raybourn, 1999; 2004) is based on human-computer interaction (HCI) experience design principles that have been adapted for the design of serious games and transmedia storytelling. HCI experience design methods require that designers understand what makes a good experience first, and then translate the elements of the experience, as well as possible, into desired media without the technology dictating the form of the

experience. Experience designers strive to create desired perceptions, cognition, and behavior among users, customers, learners, or the audience. For training and education purposes Simulation Experience Design is employed in the design of the entire transmedia or game system, from the design of scenarios, characters, roles, assessment interfaces, and associated media. This design method is based on the notion that the one's total experience is integral to the learning process.

There are at least four transmedia design principles that can be applied to Simulation Experience Design (see Figure 3): the development of Character (Interaction and Personas), Storytelling (Narrative and Scenarios), Worldbuilding (Place), and Audience Performance (Participation and Emergent Culture). We will use the example of the Real Heroes Program to illustrate each stage as well as provide insights for training.

In the interaction stage of the cycle emphasis is placed on identifying personas (Cooper, 1999) and roles. In this stage the transmedia designer would focus on understanding how the audience will interact with characters in the story. Focus is on developing an approachable character with which the learner can form an emotional bond. In the case of the Real Heroes Program the audience is the fanbase and the characters are the Real Soldiers who embody the values the transmedia campaign is attempting to convey. Their interaction in-game, through blogs, videos, photos, and Twitter feeds provide emotional ties to backstories and sidestories for the fanbase who is playing the America's Army game (Raybourn & Silvers, 2011). However in the case of training or education the learners are often both the audience and characters at any given time. Learners must see themselves as contributors to their own training story as first-persons, as well as have the opportunity to evaluate their performance from third-person point of views. For these reasons transmedia designers should allow for co-creation of narratives, characters, and interactions.

In the narrative stage designers co-create stories or scenarios that serve as the structure for learners to explore concepts. Here we ask the question, what is your training story? In the case of Real Heroes, their story is one of enduring Soldier ethos. The scenarios that play out are grounded in reality and open-ended—we are with them when they make public appearances, and we can talk to them in-game. In the case of transmedia training campaigns we ask the same question and this time build serious game scenarios and educational content that convey a believable, consistent message that learners can easily connect with. Learners can explore facets of unfolding episodes of a narrative through mobile devices, television, video, radio, Web, and print. We use a narrative framework of media elements that invite the learner into a world that goes beyond each individual medium to tell the story and also allows for co-creation.

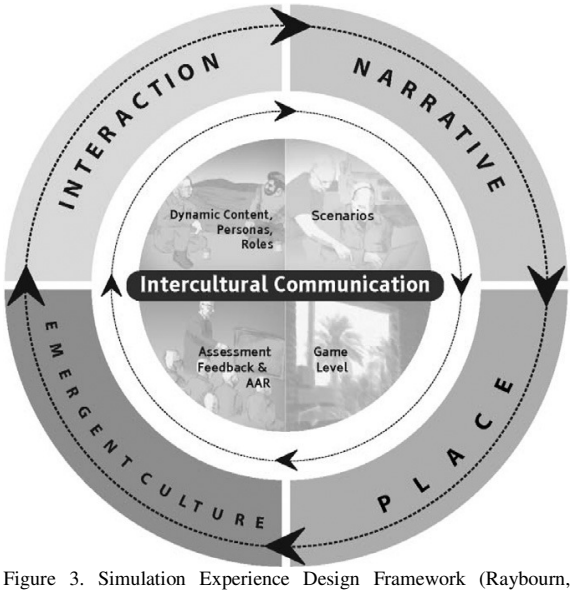

Figure 3. Simulation Experience Design Framework (Raybourn, 2007).

In the third stage, place, designers consider the impact of the physical and virtual environments, or worlds, on narrative. In the case of the Real Heroes Program as well as training, place may be the serious game's immersive environment, an alternate reality game that occurs in both virtual and physical places, or the physical training environment in LARP. These environments allow the learner or audience to explore the world in the story interactively. There are a number of sidestories that might be developed as learners ask questions about place and seek to situate themselves in the story world.

Finally, the emergent culture stage presents an important component to successfully designed training which is the opportunity to reflect on experiences in the situated context (environment) in which the learning takes place (Lewin, 1951; Vincent & Shepherd, 1998). This collaborative reflection creates an emergent culture of audience participation and performance that acts as a foundation for the subsequent transmedia experiences (Raybourn, 2007). At this stage we can use social media for commentary on the training story as it evolves. Emergent culture is an opportunity to explore the broader training story in different ways to enrich the core experience.

7. ARMY GAMES FOR TRAINING: SERIOUS GAME TRAINING SUPPORT PACKAGES

Another example of a transmedia approach in use by the U.S. Army links the training story to a serious game. The Program Executive Office Simulation Training Readiness and Instrumentation (PEOSTRI) Games for Training Program produced 160 complete tasks from training support packages into graphic novels and machinima. Graphic novels similar to those utilized by the America's Army Game Project are currently in use by the U.S. Army to augment game-based collective training. The graphic novels set up the stand-alone scenarios in the serious game and provide interactive

vignettes made from in-game machinima that demonstrate the right way to execute certain tasks. The interactive digital system includes instructor and student guides, tactical materials, After Action Review guides, and VBS2 game scenario files. The use of graphic novels to augment the serious game training allows learners to review tasks before and after gameplay. The graphic novels are reminiscent of the U.S. Army comic book series popular in the 1960's called the U.S. Army Preventive Maintenance Manual published by PS magazine. Since the content of the training support package (TSP) tasks must be accurate, this stylistic approach allows more tolerance for lengthy sections of text as it ties the TSP graphic novel to a format that is familiar. The comic book format focuses on episodic story elements (McCloud, 1993).

8. CONCLUSION

In summary, this paper described why transformational training experiences are necessary for Defense and Homeland Security, and how transmedia storytelling campaigns support the design requirements of the Army Learning Model. We discussed why transmedia storytelling is compelling and how these designs engage the human brain and emotions. We demonstrated how the Simulation Experience Design Framework (Raybourn, 2007) can be applied to both serious games and transmedia storytelling design. Finally, examples of how the U.S. Army utilizes transmedia for its strategic communication and serious game training were offered as examples of successful campaigns.

The author posits that 21st Century demands on training and education will require that we transform training practices. In particular there is a need to deliver training and education in Defense and Homeland Security across multiple media, providing the learner multiple entry points into the training. Transmedia was presented in this paper as a candidate to address this need. This paper addressed transmedia approaches inspired by the entertainment and commercial games industry that can be leveraged for application toward augmenting serious games for training and education. Future growth can be expected in the areas of serious games and transmedia for education and training as momentum gains and these approaches become more mainstream in Defense and Homeland Security sectors. New paradigms for 21st Century training and education require transformational strategies. Transmedia storytelling is a transformational technique used by the entertainment, advertising, and commercial game industries that is applicable to Defense and Homeland Security training and education.

Transmedia campaigns are the purposeful, coordinated, and strategic use of multiple media to relate a single, coherent story or narrative as it unfolds over time to engage new audience members or keep an audience engaged. Transmedia campaigns represent a unique opportunity to transform serious games and other tools for education and training from stand-alone learning instances to complete training experiences that transcend time and any one medium. This approach is not only consistent with the goals of the ALM 2015, but it can also provide a practical framework for developing media-rich training that presents cohesive and integrated content. Transmedia storytelling supports serious games to create transformational defense and homeland security training that goes far beyond stand alone solutions—toward more enduring and memorable training experiences.

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