

Towards Minimalist Serious Game Design

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ABSTRACT

The last ten years the military has seen large success in the use of games and game technologies within the tactical training community. First person shooters dominate this area with significant investment around the world, primarily increasing the realism and fidelity to meet perceived training requirements. Unfortunately, not all training objectives can be easily met through the current military approach to gaming. In an effort to meet these needs some organizations are investing in completely new high end game based training systems or worse, attempting to shoehorn in functionality that is not a good fit for current systems. Both strategies are leading to greater cost, system complexity, and user confusion. One methodology that has been applied to entertainment games is minimalist game design. Minimalist games designs generally define small games with compact but rich rule sets that provide narrow decision spaces and often abstract world representations without diminishing the perceived depth of play. These minimalist designs create micro worlds in which a player can experience and experiment with a distinct subset of rules to train on requirements that would not necessitate a large simulation game. Further, they meet the promise of replay ability, self-regulation, and motivation that other gaming solutions often lack. This paper looks at how minimalist game design can be leveraged in serious games in order to focus on delivering a particular learning or training outcome. Using case studies from around the world, and supported by data collected from the Serious Games Showcase & Challenge this paper aims to set out the fundamental game design principles that support minimalist serious games design, and provide examples of how they can be leveraged to synergistically support existing enterprise solutions to gaming in the field

ABOUT THE AUTHORS

Dr. Peter A Smith is currently an assistant Professor in the School of Visual Art and Design at the University of Central Florida, with over 10 years of experience working in the field of Serious Games and simulation. In this time he has worked on a diverse catalog of gaming projects for the Navy, NSF, ADL, DAU, and many more. Peter received his Ph.D. in Modeling & Simulation from the University of Central Florida in 2012. He has presented internationally on the topic of Serious Games including the 2007 Serious Games Summit opening presentation on the Taxonomy of Serious Games. He is also a founder and previous chair of the Serious Games Showcase & Challenge a competition that highlights the best work in Serious Games held as an integral part of the IITSEC Conference for the last 9 years.

Stuart Armstrong is the Chief Technology Officer for QinetiQ's Simulation and Training Group. Stuart started his career at the Defense Evaluation and Research Agency (then part of the UK MOD) in 1999, developing defense simulations and joined QinetiQ when it was privatized in 2001. Since then, Stuart has been responsible for the practical exploitation and application of many simulation technologies in support of a wide and diverse military user base. In his role as CTO, Stuart provides advice and support to senior decision makers on the impact of emerging technologies on the organization training and education policy. Through his work, Stuart has introduced the concept of Serious Games to the UK military training landscape and has developed numerous novel training applications from the technology. In particular, the fielding of two Urgent Operational capabilities based on games technologies has helped save UK military lives in current operations.

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INTRODUCTION

“Perfection is achieved, not when there is nothing more to add, but when there is nothing left to take away.” (de Saint-Exupery, 1967)

Published in English in 1967, Antoine de Saint-Exupery wrote this famous quote about the design of aircraft before his death in the 1940s. His philosophy on good design can be echoed in products far beyond his original intent. Minimalism as an artistic movement began after World War II and is represented with the use of pared down design elements. In the arts it is thought to be a response to abstract expressionism, but in game design it is a reaction to pushing the envelope of new hardware and vastly improved visual quality to explore the actual design of games, beyond simulating reality, providing unique and compelling experiences.

In the past minimalist design in games was a technological constraint. This is no longer the case. Computers are capable of running complex simulations of virtually any phenomenon or training scenario. The last ten years the military has seen a proliferation in the use of games and game technologies within the tactical training community. According to (Roman, Brown, 2008) “Serious Game technology is an effective means to meet a wide variety of tactical training requirements” and further identified that serious games are “well suited to developing the cognitive skills necessary to turn a team of experts into an expert team”. The paper highlighted the success of the use of serious games such as DIVE, DARWARS, VBS1 and VBS2 in delivering effective tactical training for the UK, US and Australian Armies. However, in the last 5 years little objective research has been conducted on the elements of the serious game that leads to effective training transfer. Comments such as serious games provide motivation, fun and are cost-effectiveness are often cited (Wouters, 2008) as to why Serious Games are effective but there has been little empirical research.

The defense adoption of serious games is following the trend of the AAA entertainment game space. In 2004 “Call of Duty: Finest Hour” cost approximately \$8.5million to develop 2005, “Call of Duty 2” cost approximately \$14.5million to develop and in 2009 Call of Duty: Modern Warfare cost between \$40-50million to develop (and an additional \$150million to market!). In parallel, there has been a strong push to increase the ‘fidelity’ of the serious game by increasing the realism of the simulated environment (particularly around improving quality of graphics and models within the environment significantly increasing the development and adoption cost.

Outside the tactical training space, serious games have been used to support education and training in a variety of industries. Much of the empirical research (Hays, 2005) indicates that instructional games are only effective if they are designed to support instructional objectives. A serious game, like any model, it is a simplified representation of only certain elements of reality. The specific elements chosen for the game should be selected on the basis of how they will support the instructional objectives identified.

(Stone, 2012) highlighted the two types of fidelity that need to be considered in the design of a serious game. *Physical* fidelity related to “how the Virtual Environment mimic the appearance and operation of the real world counterpart” and *Psychological* fidelity which is the “degree to which the simulated tasks reproduce behaviors that are required for the actual real world target application” He goes on to say that Psychological fidelity has been more closely associated with transfer of training than Physical fidelity.

Given this, minimalist serious game design is a design philosophy to pair-down the elements of a serious game to only those that are needed to train a specific task. These games are not identified by their capability to push more

polygons at the users, but by their ability to push the right information at the right time to create meaningful training situations.

MINIMALIST GAME DESIGN

Minimalist game design was defined by Andy Nealen, Adam Saltsman, and Eddy Boxerman, in their seminal paper, *Towards Minimalist Game Design* as games that “have small rulesets, narrow decision spaces, and abstract audiovisual representations [that] do not compromise on depth of play or possibility space.” (Nealen et al., 2011) Minimalist games are identifiable by their simple graphics and interfaces. These games are the quintessential easy to learn, yet hard to master games that have peppered the history of games with classics like Tetris that anyone can play, but few truly master. The key to these games are that they mask their complexity, their richness of experience, behind an easy to approach façade that draws players in.

Minimalist game design has grown in dominance in the mobile games space, as people are looking for games that are easy to pick-up and put down as gameplay moves from the living room to the bus, and the waiting room. New games, like Saltsman’s new era classic, *Canabalt*, launched the endless runner genre. Others, including *100s*, *Threes*, *SpellTower*, and many more have cemented the design philosophy as a new methodology that is here to stay.

The appeal of minimalist game design in the serious games space, and for that matter the greater simulation industry at large is that it presents an approachable face to unsophisticated players or trainees that may be scared off by the traditional designs of their training. The current high end games used by the training industry take their cues from the traditional AAA game design schools of thought. They require intimate knowledge of how entertainment games work, and are largely unapproachable by novice users. For example, *VBS3*, *Unreal*, and *Crytek* are all used in military training projects, and all of them are used for commercial first person shooters. Knowledge of the WASD and mouse look control schema are inherent requirements for understanding the operation of these training environments.

This is not meant to take away from traditional game based training environments. As they have clearly been successful in their goals. It is to say that there are other training goals that cannot, or should not be pursued in traditional environments, and yet gaming is possibly still a great way to train those goals. Minimalist Serious Games would be designed to provide an approachable training environment that allows the player to fully explore the possibility space of a constrained level of training.

By eliminating everything that is unnecessary in the training environment, everything that is left will be important to the learner. Examples of these games already exist in the simulation space, but they tend to be overshadowed by their more complex enterprise level solutions to gaming previously mentioned. Games that embrace minimalist values have found success in training and have also been featured in the *Serious Games Showcase & Challenge (SGS&C)*.

EVIDENCE OF MINIMALIST GAME DESIGN IN THE SERIOUS GAMES INDUSTRY

The *Serious Games Showcase and Challenge* provides a venue to educate members of the education, training and simulation communities on the potential of serious learning games. *SGS&C* provides a venue to “showcase” serious learning games while providing a challenge for developers to compete for the title of best serious game across a series of categories. To qualify for the *SGS&C*, serious game entries should incorporate game play dynamics in a product to educate or train a learner at any stage of the learning continuum from middle school through adult. The finalists are representative of the overall serious games space. Further, the *SGS&C*’s expert evaluators, worthy incentives and a marketing/awareness campaign attract competitive entries that are representative of the industry. Leveraging data from the *SGS&C* it is possible to see some of the tenants of Minimalist Game Design already at work in the industry.

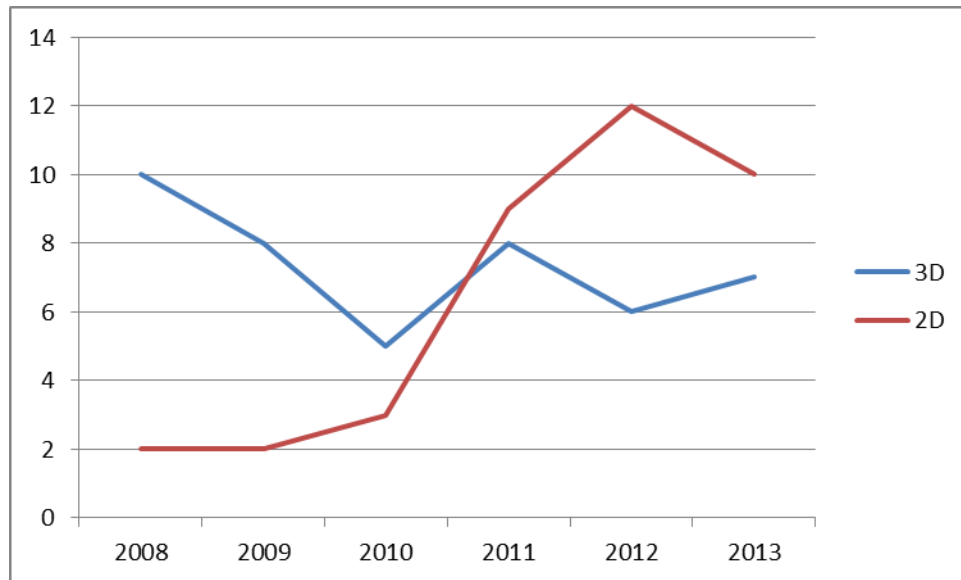


Figure 1. SGS&C Finalists with 2D Versus 3D Graphics

Figure 1 shows the finalists in the SGS&C that had 2D graphics versus the finalists that used 3D graphics. In the beginning of the SGS&C most of the games were 3D. This is emblematic of the engines being used in the industry, and the projects that were being funded at this time. For more details into the technology and topics covered in those games, *Six Years of the Serious Games Showcase & Challenge Distilled* (McNamara et al., 2012). When that paper was released there was virtual parity between 2D and 3D games. In the years since, 2D has become the dominant graphical form of finalist. This is not a product of not receiving 3D games into the challenge, but the 2D games are scoring higher during the downselect event. While true that just being in 2D does not mean that the game is minimalist, many of these games are exploring the tenants of minimalist design. 2D games designers are free to design and not encumbered by learning complex 3D engines or developing 3D assets. Given the freedom of time, and the ease to experiment, 2D designers are exploring actual game design in a way 3D designers currently are not able to.

This is not meant to suggest that minimalist game design are required to be 2D, but that currently the tools for 3D games provide less room for minimalist game designs to function. With the current crop of 3D games there are expectations of what these games should be, in particular the level of realism expected in the virtual environment. 2D designers currently have more freedom to explore the possibility space of their designs without predetermined expectations.

Teaching Team Co-Ordination Game (T2eC) – An example of a minimalist serious game

In the paper “Zero-Fidelity Simulation of Fire Emergency Response: Improving Team Coordination Learning” [Toups et al, 2011] the authors describe the development of a successful ‘minimalist serious game’, what they describe as zero fidelity, used to train emergency responders on team co-ordination. The approach taken by the development team was to concentrate on replicating distributed cognition characteristics of fire-fighting and not the physical environment. This approach had two main benefits: economy and focus. By abstracting details of the physical environment that are expensive to replicate they were able to develop the game at a much lower cost and focus on the actual training task at hand – “reducing the cost and increases the focus of education”.

The results of the fielding of T2eC highlighted that the minimalist approach was effective in improving team co-ordination between the participants. In particular, rich multimodal communications was an emerging characteristic from the game play.

TENANTS OF MINIMALIST SERIOUS GAME DESIGN

In their paper, *Towards Minimalist Game Design*, Nealen et al. (2011) characterize minimalist games as those that contain the following five features:

- Simple Controls and Mechanics
- Simple Visual Style
- Thematic Aural Design
- Tractable Player Choices
- Creative Player Spaces

These same features can and should be leveraged by serious games. The following sections will provide clear examples of these features in action, based on finalist games in the SGS&C as well as anonymized feedback from the SGS&C evaluators.

Simple Controls and Mechanics

The number one tenant of minimalist serious games design is simple controls and mechanics. As with minimalism as an art style, designers should only include features that are required for the training outcomes desired. This minimalist form will allow the user to spend time actually learning the content without being confused by the control scheme or superfluous content that is not regarded as necessary for the training at hand.

This should also be applied to external control devices. For example, if the player is required to use a joystick there should be a specific reason why that control scheme should be used. Through the years, the SGS&C has received many games that require external special devices including virtually everything imaginable from simple joysticks to neurological sensors. There are times when these devices are important to the game play, but by and large comments about these devices are related to how hard they are to learn to use, or how they do not work. Everything in a games design should support the user in accomplishing the tasks at hand; including what is displayed on screen, articulated through audio, and interfaced with the player outside the game environment. If this is not being done, it should be removed from the experience. Further care could be made to allow for a variety of input devices and schemes to be mapped by the players themselves.

In a minimalist serious game the play mechanics, that is what the player can do in the game, should all be there to support the training. While not necessarily true in entertainment games, mechanics that only support the fun aspects of games should be removed. Mastering a highly crafted gaming experience will be fun if it is done right.

In the SGS&C 24% of evaluator comments are related to user experience. Specific comments from evaluators supporting the use of simple and easy to understand controls and mechanics include:

- “Very professional interface, art, and game mechanics. This is a simple game which should be effective at conveying the right approach to customers.”
- “It was simple but the connections were clear.”
- “This was fairly simple to play and understand game.”
- “The game's opening training is simple and effective. The gameplay and technology use isn't the most innovative, but the instructional elements are well integrated.”
- “The interface was simple and clear and presented nice visual cues.”
- “The interface was well done - simple and playable, with all of the buttons I needed.”
- “I like the way that the game uses simple game play experience to relay a complex process and algebraic rules. At first, I wondered what the instructional value was, and then it became clear I was learning concepts.”
- “It was a cleverly-simple, visual cue that helped me remember”

Praise for simple controls is easy to come by in the evaluations, but so are complaints about confusing control schemes. One evaluator reported, “First, gameplay was not very discoverable and controls were not very approachable or usable.” Another in response to non-standard controls commented, “I found the controls for moving

around the environment not easy to use.” Further, and probably most infuriating to evaluators sometimes the controls do not respond as the user might expect they should, “Although presented as situations, events did not even change based on my responses in the simplest choose-your-own adventure way, but simply recorded my score like I was taking a test.”

The 2009 SGS&C student finalist game, NIHONGOUP, provided a game that was simple to control, with a simple player mechanics that supported learning Japanese. This game had a series of mini-games and each one supported only the task at hand. This game also had many other tenets of minimalist serious game design including a simple visual style.

Simple Visual Style

A simple visual style is another tenant of minimalist game design. The idea behind a simple visual style is that the presentation should be streamlined. This is to say, that the visuals should not distract from the learning. The visual style should also be appropriate to the learning goals. For example, a game about piloting space craft should use a NASA style theme that ties the learning to the tasks, and not a fantasy magic theme, this could lead to confusion of the player as to how the environment related to the training. Despite the creative genius required to develop magical forests of tree based rocket ships the desired learning outcomes can easily get lost in the creativity. This is not to say creativity doesn’t have its place; a magical forest might be a wonderful place to learn to read, or about environmental issues but the theme should match the outcomes.

Simple visual style does not necessarily mean 2D, or cartoony, either. These games are more likely casual games, games designed to appeal to mass market of players that are not necessarily minimalist at all. In fact visually, casual games can become very complex. Conversely, 3D games can apply minimalist design values to their visual style, the key is not having unnecessary design elements in the visuals.

While it might seem counter intuitive, striving for the highest fidelity realistic graphics can, at times, be a hindrance to effective game design. This is especially when other systems don’t match the visual fidelity. For example one evaluator commented, “I can see how this simulation could have a real impact on soldier safety, and could potentially save lives. I was a bit distracted by how different all of the other avatars acted, when compared to my avatar’s behavior for completing a successful scenario.” The issue here is really that the animation system is not at the same quality level as the graphical system. In minimalist serious game design, designers strive to have all the systems match.

In the SGS&C an average of 21% of comments are related to graphics. Some comments specifically supporting the use of simple graphical styles are:

- “The graphics were fun and comical, keeping an element of humor consistent with the absurdly hilarious theme.”
- “Visually, it is cute and different than the normal type of graphics you see for educational games.”
- “The visuals were well done, the backgrounds neither significantly enhancing nor detracting from the experience.”
- “Also, great playful graphics and a nice use of a non-obvious metaphor for the learning objective.”
- “I really like the graphical feedback when things go wrong and you realize the impact of cause and effect.”

Not all comments about graphics are as kind. When the quality of the graphics are not at a high enough standard evaluators have made comments like, “The graphics are painful to watch and it was not clear to me at all that this game was about.” or “Graphics are poor ... with important elements (such as save and edit) being off-screen and unavailable.” or “This was not a game, but a quiz that happened to have 3D graphics.” While all developers should strive to have good graphics, they cannot always solve a game’s problems. The following are examples where the graphics were not bad, but did not match the needs of the game:

- “The cute graphics and story cannot overcome the lack of guidance.’

- “Language and graphics are very inappropriate for younger audience and gameplay seems too tedious for older players.”
- “While the graphics and environment were well done, this doesn't negate the complete senselessness of this interaction.”
- “The environment is meant to appear life-like, but that level of fidelity almost works against the learning goals. It is so lifelike, that I already know what's going to happen at the outset.”

The key here is that the graphics do not have to be amazing, but they do need to match the quality and experience that the training task requires. The commercial entertainment game, Team Fortress 2, from Valve Software, is a great example of a game that found success in adopting a minimalist visual style. The original game was a role based multiplayer military game that ran on the same engine as Half-Life. Team Fortress 2 is also a role based multiplayer military game, but the graphical fidelity was lowered to a cartoony feel. The resulting game is actually more visually appealing and has lower hardware requirements than it could have otherwise had. Everything else about the game is virtually the same.

The simple graphical style is more approachable by new players, and as an added bonus is easier for the artists to build assets for. This in turn, lowers the cost of development for the game. If a simple graphical style can be applied it can be used to lower costs, improve understanding, and bring home a more cohesive feel to any serious games project.

A 2011 SGS&C student finalist game, Bushudo, is a great example of a game that applied a simple visual style to an otherwise complex subject. The game was designed to teach Kanji, a form of Japanese writing. The designer chose to compose the entire world map out of Kanji, and colored it to match what you might expect. For example the Kanji for grass was present in a green color. Your player character could walk on it. The Kanji for water was in blue and your player character could not navigate it. There was a key available to learn the words at first, but eventually the Kanji was understood, and playing the game provided a constant reinforcement.

Thematic Aural Design

While often overlooked the importance of aural design cannot be overstated, and is the next tenet of minimalist serious game design. The audio in any serious game can change the mood, setting, pace of place, even the stress levels of the player. Integrating the aural design into the theme of the game helps build a single experience for the player. Some games, like the classic arcade game, Space Invaders, have changed the difficulty level by simply increasing the pace of the music in the game. A player's reaction to sounds can be surprisingly visceral.

On average 12% of the SGS&C evaluator comments are related to sound. Often times comments on good sound are included in comments about the interface, graphics, and overall experience. This is most likely due to sound often being overlooked, except on the occasions where it is either very good or very bad. Here are examples of some of the better comments related to sound:

- “In terms of technical quality, its primary aspiration- to present a young audience with a learning game that does not advertise its purpose and is not distinguishable from commercial games in terms of gameplay, visual and sound quality – is, in my view, fully achieved.”
- “The concept, the graphics, the sound, the simple interface are all perfect. Great job.”
- “I like the variety in levels and challenges and I think that the graphics and audio are cute, too.”
- “Very high production values (video and audio) made it a pleasure to play.”
- “The audio was very well produced. The ambiance suitably creepy.”

Of course, sound is difficult to always get right. When sound design is done poorly the evaluators make it known. Here are a few examples of comments about poor sound design:

- “There were a few sounds in the game that I thought could be better. Most notably, [objects] could have had a sound that more clearly matched the visual, and the sound radius could have been turned down significantly.”
- “The voice audio was too low vs. the effects audio or background music.”

- “Also noted that in some cases the error sound (like a timpani hit, "bong") means you can't do something and other times it means you're also being penalized a move. Don't understand the inconsistency of treatment.”
- “The music and artistic theme were unusually 'dark'. It distracted me (impacting flow). The quality was fine, but it felt like a creepy, horror game...I suggest a slight change toward upbeat or light-hearted music and audio-effects.”

Most notably it is clear that sound is important and needs to be in serious games. Unfortunately, sounds are often the last thing added to a game, and sometimes a game will leave sounds out completely, “The game seriously needing (lacking at the moment) sound!! Any music background and voice over would strongly benefit the game.”

A great example of great aural design in a minimalist game is 2013 SGS&C student finalist Euphony. In this game the player explored an abstract environment to find and differentiate hidden sounds. The game served as training for people with hearing deficiencies or had the need to operate in noisy environments. The quality to the sound in this game made it stand out in this category.

Another notable example of aural design is 2008 SGS&C Student finalist I Am Lonely. This game put the player in the role of a frog, and set them on an adventure to find a mate in the wilds of Wisconsin. The player would explore various environments and in each one would find the types of frogs that might exist there. If they found a matching croak to their own, they could find their true love among the frogs.

Tractable Player Choice

Tractable player choice is another tenet of minimalist serious game design. In order for a player to control their environment and make good choices the games feedback system needs to keep the player informed of how their behavior effects the environment. On average 33% of evaluator comments are related to feedback. This is the single largest category for feedback in the SGS&C overall. As seen in Figure 3, in 2008 over 50% of all comments were related to feedback.

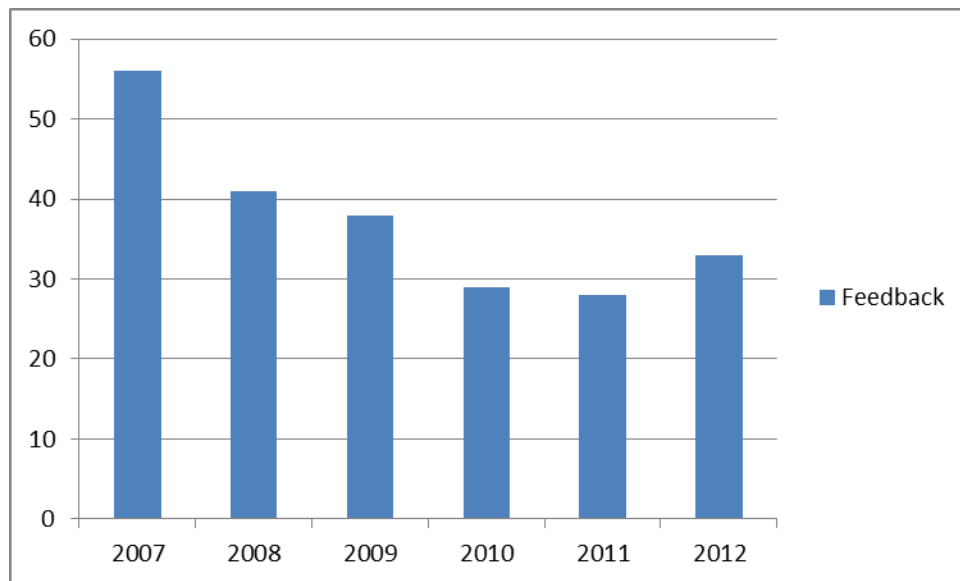


Figure 3. Percentage of Evaluator Comments Related to Feedback

When feedback is done right the game is usually much easier to player and much more beneficial to learners. The following is a selection of positive comments related to feedback:

- “Feedback built into the game, besides feeding into the ‘Political Capital’ score, also demonstrates how the decisions players make can be used to measure real world attitudes.”

- “Clicking on an instructional objective in the AAR opened a new window to show the instructional feedback and moved the POV to the object. This was good.”
- “In-game feedback was provided by the patient’s reactions and through a bar measuring patient’s mood. Once the scenario is completed, there is an excellent AAR, providing what went well and what needs to be improved.”
- “I liked the use of trophies and continuous feedback on progress.”

Unfortunately not all games get their feedback system right. Many comments reflect the evaluator’s frustration with various games feedback systems:

- “Without some instruction or some feedback as to what a student is doing right/wrong, there are students who simply won't 'get it' and will give up in frustration.”
- “In general, I wasn't sure how to use the feedback to improve my play.”
- “More immediate feedback may be more helpful.”
- “There is no instructional feedback or real learning capability and since I am unfamiliar with the definition, I am unable to assess whether the difficulty level is being adjusted to reflect my performance on the game.”
- “I did not see any negative feedback for poor interactions or gameplay.”
- “During some feedback what was written on the screen was different than what was said - sensory conflict - I'm trying to read and listen at the same time.”

With good feedback players have the best chance of getting into a zone of flow, or that feeling a harmony with a game, where the challenge matches the skill level of the player, and increases the challenge over time. (Csikszentmihalyi, 1991). Also, without good feedback the player of a serious game will not know if they are learning.

An example of an SGS&C game that provided tractable player choice through the use of a robust feedback system is 2012 finalist, DragonBox+. This game taught algebra in a deceptively simple casual/mobile game environment. At the end of each level the player was graded in their performance, provided a number of moves versus optimum number of moves score, given check marks for meeting various goals, and provided with the choice to move on or try the level again. This feedback system is similar to those found in games like Angry Birds, but applied in an educational context provided an enlightening experience for the player.

Creative Spaces to Explore

The final tenant of minimalist serious game design is creative spaces to explore. While not a major category of evaluator comments for the SGS&C there have been a number of comments made about explorable environments over the years. Some of these include:

- “The ... world offered a lot of learner control to explore.”
- “From an instructional standpoint, I like how the player has a lot of freedom to explore and use the tools.”
- “The game design assumes you are going to explore and learn the rules as you go.”

There are also moments where the freedom to explore does not benefit the game overall. For example this comment expressed concern of the use of game specific notation that made it more difficult to navigate, “Nodes/Areas to explore were named using fiction/jargon that made it hard to figure out where to go to even figure out what the player’s goals were.” Other times evaluators were concerned that they did not have more freedom to explore, “Player was unable to explore any interiors of buildings or move independently without being called to task by the squad leader.”

An example of an SGS&C finalist game that provided a creative space to explore, as well as many of the other tenets of minimalist serious game design is, Door Kickers. This 2013 finalist created a minimalist designed space that represented a military or police style shoot house. The game adopted a top down perspective and allowed the player to run through an enormous number of situations in a fun, yet intellectually stimulating gaming experience.

The use of minimalist styling allowed for massive customization, and variation in scenarios. The free form player space allowed for multiple solutions to clearing various floors.

CONCLUSIONS AND OUTLOOK

Minimalist Serious Game Design is one potential game design philosophy that can be used in developing serious games. The traditional models of design in the serious games space are also borrowed from game development. With majority of serious game development in the military space still revolving around AAA models of game development exploring new design methodologies is crucial to expanding the art of the possible in serious games. This is not to say that all serious games need to be 2D, minimalist, or simple. It is to say that the industry needs to evaluate its design procedures and ensure that the right games are being built for the right task.

The military in particular should be commended for the strides it has taken in developing and adopting gaming technology into its training. Further, the development of consistent technology and enterprise solutions ensures that we have a trained work force that can develop its own training when the need arises. Unfortunately this technology is not currently capable of being a universal tool for all game development needs.

As the industry moves beyond the current design mindset of 3D, first person shooter, AAA quality games and begins to expand what a gaming solution can be minimalist serious game design can help broaden the development goals of the existing training while providing a unique tractable solution to game development that will provide the maximum possibility space for training.

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