Russell B. Williams, Ph.D.

Assistant Professor & Option Coordinator
Digital Graphic Communication
School of Communication, Hong Kong Baptist University

A Nine Component Framework for the Design and Analysis of Meaningful Games

Introduction

Whether we call them video games, computer games, console games, arcade games or on-line games, the computer-based gaming phenomenon has put discussions of gaming into public and academic spheres. Computer-based gaming is big business and computer-based games appear to have many of the effects associated with other forms of media use and consumption. These observations make it interesting and legitimate to talk about and study games from many different perspectives, including the design process and the effects of play.

Games come in all shapes and sizes and can be played using a broad range of media. Games can inspire, inform, and share as well as entertain. Game design is about creating engaging competitive experiences. When done well that designed experience can be translated to a variety of mediated forms with each form capturing the essentials of the game play while leveraging the strengths and minimizing the weaknesses of a particular medium. But what are the key factors in the design of a game? Identifying these can improve games and the game design process. Identifying these can also provide researchers with variables in the study of the games and the effects of game play.

Starting from the perspective of computer-based games LeBlanc (2004) and Hunicke, LeBlanc and Zubeck (2004) built on the foundation of Church (1999) to present a formal approach for the design and analysis of games, *MDA*. Mechanics, Dynamics and Aesthetics, MDA, is a substantial way to think about and structure the game design process. MDA starts with the idea that the goal of a game is to win, whether the competition is between players, between player(s) and the artificial intelligence in the game and/or player(s) and the game itself. Whether a game is computer-based, paper-based, serious, casual, meaningful, solitary or massively multi-player, MDA informs the design process and puts the creator in a position to make important decisions about the game. Still, it is the product of a computer-based approach, and does not give equal footing to the impact of structuring the game space, determining visualization and implementation, and the nature of the game story.

Using MDA as a starting point I have developed a more complex framework for designing and analyzing games. This new framework has nine components: the Schematic, the Audience(Players), the Intention, the Media, the Mechanic, the Aesthetic, the Poetic, the Subjective Experience and the Dynamic. In this nine point scheme the Aesthetic of the MDA becomes the Subjective Experience, the fun being generated by game play, and the Aesthetic describes the visual style of the game, the look and feel, a more traditional application of Aesthetic as a word and concept.

This framework is the result of my own game design activities and my academic background. In the process of developing a computer-based game for research I discovered the need to build and play a paper prototype. This prototype has subsequently taken on a life of its own as a board game and a company, *unexpected elephant experience design*, has been formed to market this game as well as subsequent creations. This board game involves abstracted computer-game play and a design framework that has proven useful in the creation of several more games. *Urban Excursion* was the first *unexpected elephant* game and it is a relatively complex strategy game without a strong supporting story. *Skyline* is the direct descendant of *Urban Excursion*. It involves simplified game play and a much stronger Poetic component. Another of the *unexpected elephant* board games built on the same basic structure is *South Africa: The Long Road to President*. This is a board game designed primarily for South Africans, as it includes content and play that will not resonate with players who are unfamiliar with the history, cultures and context of South Africa.

Games & Play

Huizinga (1955) has identified six characteristics of play and by association, games. First, play is voluntary, it is a form of freedom rather than restriction. If one is actually ordered to play then it is no longer play. Second playing involves pretending, it not 'ordinary' or 'real' life, it is something other and perhaps something more. This does not mean that 'real' lessons cannot be learned or that 'meaningful' things cannot be communicated through play. Third, play is immersive, while people are playing their attention is fully engaged. Fourth, play involves certain limits of time and space. Fifth, play is based on rules, it is organized. Even spontaneous playground games are built upon a set of rules that are accepted by all of the players. Sixth, play is social. The group can be formed and then play or the group can form out of the shared to desire to play.

Zimmerman (2004) extends this definition, "A game is a voluntary interactive activity in which one or more players follow rules that constrain their behavior, enacting an artificial conflict that ends in a quantifiable outcome. Games embody the same structure-play relationship of other ludic activities, where play emerges as the free space of movement within more rigid structures…To create a game is to design a set of game rules (as well as game materials which are an extension of the rules). The rules serve to limit players' behaviors…To take part in a game is to submit your behavior to the restrictions of the rules. Rules might not seem like much fun. But once players set the system of a game into motion, play emerges. And play is the opposite of rules. Rules are fixed, rigid, closed, and unambiguous. Play on the other hand is uncertain, creative, improvisational, and open-ended. The strange coupling of rules and play is one of the fascinating paradoxes of games" (p. 155).

To embrace and take advantage of this apparent paradox designers need to move beyond the rules alone and embrace each one of the factors that make a game complete. The nine components of game design identified in the framework here are completely interdependent. If you change one of them you will need to make changes in others. There are actually no mutually exclusive factors in the process and outcome of game design.

The Components

The Components within this framework can be divided into four segments. The first segment includes only the Schematic. The second segment includes Audience, Intention and Media. The third segment includes the Mechanic, the Aesthetic, the Poetic and the Subjective Experience. The fourth segment includes only the Dynamic.

The Schematic

Schematics are representations of the relationships between objects and players in the game space. Every game has a space in which people play, even when the game is not location based. Schematics can be generated *ex nihilo*, be a product of synthetic design, or they can be derived from the abstraction of a process, system, or environment (PSE) from the physical world. This process of abstraction and the establishment of Schematics for a game are particularly important when talking about meaningful games where designers intend to teach players about the PSE which has been abstracted.

Schematics involve the representation of relationships rather than reality. The represented relationships can be spatial, social, cultural or perceptual. Perhaps the most enduring image of a schematic representation is the 1933 subway map for London. It is the direct ancestor for the subway maps currently used in London and Hong Kong and serves as the foundation for subway maps used around the world. Designed by Harry Beck the 1933 map tells the user about the relationship between the stations on the subway line rather than the actual topography of London. The important information for the user is the relationship between stations that will take them to their destination and not the positioning of the stations in the physical world. The map will not help a person on a walk through London but it will help a person use the subway to get to their desired destination. The system in the map is abstracted from physical reality to essential relationships that make it easier to comprehend than the physical layout of the city.

Jenkins (2004) discusses the power and relevance of designed human spaces for the location of game experiences and quotes the seminal work *Image of the City* written by Kevin Lynch in 1960. "Urban designers exert even less control than game designers over how people use the spaces they create or what kinds of scenes they stage there. Yet, some kinds of space lend themselves more readily to narratively memorable or emotionally meaningful experiences than others." Lynch suggested that urban planners should not attempt to totally predetermine the uses and meanings of the spaces they create: "a landscape whose every rock tells a story may make difficult the creation of fresh stories." Rather, he proposes an aesthetic of urban design that endows each space with "poetic and symbolic" potential: "Such a sense of place in itself enhances every human activity that occurs there, and encourages the deposit of a memory trace" (p. 129).

Abstracting the process, system, or environment for use as a game space will help reveal the meaningful and memorable aspects of a PSE. There are five aspects of a PSE Schematic that will have a direct impact on the Mechanics:

1. The function(s) of objects/people in the PSE;
2. The core relationships between objects/people in the PSE;
3. The goals of objects/people in the PSE;
4. The real or perceived barriers to the achievement of goals; and
5. The real or perceived affordances for the achievement of goals.

Barriers are the obstacles to action within a PSE. Affordances, conceptualized by the perceptual psychologist J. J. Gibson and popularized in the design world by cognitive scientist Donald Norman, refer to the actionable properties between the world and an actor in the PSE. "To Gibson, affordances are relationships. They exist naturally: they do not have to be visible, known, or desirable" (Norman, 1999).

The identification of these attributes in the development of the Schematic is key in the process of game design. It is accomplished by systematically removing objects and representations which are components of the reality but do not inform an understanding of the underlying functions, relationships, goals, barriers, and affordances which exist in the PSE. Abstraction leads to the conceptual model on which a PSE operates. This conceptual model is what Harry Beck visualized in his original subway map for London. The abstracted PSE may or may not be explicitly designed but upon its discovery it is possible to use it in the design of a game that invokes one of eight kinds of fun and invites players to learn more about the process, system or environment.

Rebuilding the PSE as a game space requires the designer to provide players with the opportunity for planning, intention and consequence. These are key components in Church's "Formal Abstract Design Tools" (1999) and are necessary for a PSE to become a game. Built on the five discoveries from the process of abstraction game designers can ask three important questions to transform the PSE into a game space:

1. What are the features of the PSE that make it playable?
2. Where are the opportunities for scoring within the PSE?
3. How is effort and reward balanced within the PSE?

The answers to these questions constitute the Schematic and lead to a manageable number of factors that can be used in game design. From this point it is possible to create the Mechanics and other elements of a game based on a particular process, system, or environment, whether that PSE is real or imagined.

In *President* the environment that has been abstracted to form the game space is South Africa, the physical space with its provinces, cities, towns, national parks, natural wonders, historical locations and road system. Because it is a physical space the abstraction is relatively simple. The country is broken down into a manageable area of spaces for movement and scoring. There is a reflection of the relative distances within the country but there are also few enough spaces to make the country playable. The game space is the map

of South Africa with a particular emphasis on the road system. President also possesses an abstraction of the election process that closely connects with the physical mapping. Votes are obtained in destinations and destinations are closely placed to location on an actual map.

The creation of a map for *Urban Excursion* was the starting point for the creation of both *President* and *Skyline*. From the original Schematic developed for New York City it was possible to discover and develop the Mechanic and Dynamic that have been translated to a variety of locations and Poetics including South Africa and a campaign for President.

Audience, Implementation & Media
Audience (The Players)
The Players are the intended audience for the game. Players are constantly referred to in every aspect of game design but their identity must be specifically defined in order to understand what needs to happen in other aspects of the game. It should be very obvious that you cannot employ the same design, communicate the same ideas, teach the same concepts, or expect the players to enjoy the experience in the same way when you are dealing with people who vary by age, education, experience or culture. It is imperative to know who will be playing the game.

A game for a localized audience will need to reflect localized sensibilities and experiences or it will not feel authentic. A game intended for tourists cannot express the same kinds of local thought or it may not be understood or enjoyed. The first unexpected elephant game was *Urban Excursion* and it is based on New York City. In its original form tourists were the primary audience. *President* is much more deeply connected to South Africa than *Urban Excursion* is connected to New York. It includes trivia and activities that would be completely foreign to the uninitiated. The tagline on the box is "no electricity required," a humourous reference to the current state of power generation in the country.

Players from different cultures and locations also have preferences for games implemented in different mediated forms. In the United States console games play a very important role in the market as people play games in their own homes. In China where there is less money to purchase technology for the home, and piracy is a concern, people play more online games in Internet cafes. In Europe there is still a very strong board game culture where people get together and socialize around a table playing a game. This board game culture also still exists in South Africa.

There are several ways to define an audience and each one can provide important information about player identity. Traditionally players can be identified through demographics. These are what appear to be the easily quantifiable factors that come together to provide a person's profile. *Demographics* can include age, gender, education level, household income level, place of residence, ethnic identity and heart language. But what appears to be simple may not be. When looking at age there is the obvious number for the years which have passed in a person's life from birth, but age can be more complex as this raw number does not always identify the psychological state of a person and their interests. This complexity leads to the identification of *Psychographics* that look at the areas of lifestyle, attitude, values and preferences. This involves categories that are less obvious but no less quantifiable and provide a potentially richer picture of the people who will be playing a game.

Left out in both of these schemes is the very important factors of cognitive and physical skills. It is important to know what your players are able to do before you set them a task. A person may not have the fine motor skills required for some computer-based activities. Other people may not have the cognitive ability to understand the game mechanic and its expression in play. Therefore it is important to identify the entry behaviors and abilities players must possess before they are able to play a game, grasp its meaning or enjoy the experience.

A very practical way to think about audiences is to use Personas and Scenarios. Cooper (1999) introduced this idea in talking about software application development. A persona involves identifying an archetypical user in a very detailed way, giving her a name and a face and a life. Building this persona will make it possible for everyone involved in the design process to know the members of their target audience in the form of a real person. Creative people can often end up designing for themselves and lose sight of the people they are trying to reach with their creation or message. A persona can connect the audience with the members of the creative team in the design and development process. A scenario describes how, when and where the game will be played and gives substance to the context in which the game will be experienced. Games are not played in isolation, so understanding the scenario of play can be as important as knowing the player. A persona can be built from the demographic description and psychographic analysis of the target audience. It needs to include the required entry skills and behaviors. The persona can then be placed in a scenario so that everyone involved understands the who, what, when, why and how of the game's life in the real world.

Intention

A designer can basically have one or more of six intentions when they create a game: to convey information, to provide connections, to grab attention, to persuade, to entertain or to express. It is rare that a game, or some other form of communication, will express only one of these intentions. They work in concert within the communication process.

Journalism, the gathering and reporting of information about people, events and issues, is one form of conveying information. Teaching and Training are also forms of conveying information. Creating community, enabling transactions and providing portals, gateways, are all forms of providing connections. Grabbing attention generally cannot operate alone, it will be connected to one of the other intentions. It is often an appetizer for the main intention. Persuasion can be individual, social or commercial in nature. Entertainment includes the processes of diversion, relaxation and recreation. Expression can be individual, cultural or social.

Whenever a game is played learning takes place. The question is whether that learning is an intended effect of the play. *Monopoly* was originally designed as a commentary on the nature of big business during the Great Depression. The most successful board game of all time is now understood as a celebration of unbridled capitalism and the need to crush opponents into fiscal submission. *Monopoly* is considered fun by millions of players who are also learning about finance, economics and the luck of the dice while they play.

Games can be designed and played for fun and/or for learning. When learning is an explicit goal it must be thought out and developed clearly otherwise it will fail. When a game attempts to train players in the use or functioning of a process, system or environment then "…the accuracy of the process or effect being simulated for training is of primary importance. In addition to the accuracy of what's being taught, the serious game must also be concerned with whether – and what – the game is actually teaching the player. If the player learns to beat the game but can't usefully apply what he's learned in the real world, then the serious game has failed its mission" (Michael & Chen, 2006, p. 43).

Here is an example of intended and unintended effects. A game is designed to teach children about loving everyone regardless of how they may appear, smell or live. This is accomplished by having the players invite people to a party and the farther they go to help someone the more points they get in the game and the

better the chances they have to win. This would certainly teach that going out of your way to help someone else has its rewards. But if the lesson is that the rewards are intrinsic to the act then this game ultimately fails because it teaches that the rewards for this type of action are extrinsic, i.e. scoring points and winning the game. So, the game may teach children to reach out to people around them but in the end they learn that their efforts are extrinsically rewarded. It also teaches that you need to be strategic in your decisions to help others so that you can be seen as the winner of the game and perhaps in life. So the struggle is to come up with a Mechanic that does not create potentially conflicting messages within the game play. I am not sure this problem has been solved because games are essentially mechanisms for extrinsic and quantifiable reward rather than indications of internal states such as peace, love and joy.

The Intention of a design must be clear and work in concert with the other elements of the game. It must take into consideration the general nature of the game as well as the particular attributes and specifications. It is up to the designer to control the learning process in the play because players can often have different objectives than the producers when they play.

President teaches players about the geography, history, people and cultures of South Africa, one person's trivia is another person's history. By focusing on travel players learn about the location of people and places in the country. With the need for nominations in the pursuit of the Presidency players must learn about the history and importance of many different places in the country. At these places players learn about individuals and peoples who have been a part of the history and development of South Africa. As in most countries, South Africans tend to have some knowledge about their own region and limited knowledge about other areas of the country. The game invites players to learn about their country, north to south and east to west. They learn as they answer questions, but, they probably learn more as they formulate questions for their opponents from the information given. Obviously, there is also learning about the political process taking place during play as the goal is to become the next President of the country, but the demands of interesting game play make the pursuit of multiple nominations less than realistic.

Media

The implementation of a game involves the media that are used to deliver it to the target audience. Computer-based games have been the focus of much of the study of games in recent years but hopefully it will become obvious that all games share certain characteristics that are worthy of study, regardless of their implementation and use of technology. The implementation dramatically alters the possibility and

opportunities of game play and the active engagement of the players with the game and each other in the game space. Understanding implementation requires familiarity with the differences between media forms. Based on the dimensions of experience that they enable, I have identified seven types of mediation for game design:

1) Spatial Media
2) Text-based Sequential Media
3) Time-based Sequential Media
4) Convergent Media
5) Computerized Media
6) Networked Media
7) Unmediated - Direct Interaction

Each form builds on the other while it creates the opportunity for different experiences. In other words, Time-based Sequential Media still rely on the dimensions of Spatial Media and Unmediated game play can take advantage of all of the media forms which precede it. Adding dimensions make each form more complex while the skills required to use it in design are built on the skills in the media form that precedes it. So, to work with Networked Media a designer needs to understand the constraints and possibilities of Computerized, Convergent, Time-Based, Text-Based and Spatial Media. Unfortunately, this is not usually the case as we jump into each of these media forms as distinct disciplines. One of these media forms is not necessarily better than another, they are built on one another and yet they are very different in terms of constraints, potential and products.

Spatial media are those that involve the three dimensions of known space: height, width and depth. Sometimes developing games using this type of media involves the physical implementation of these three dimensions in space. More often, as is the case with a discrete graphic or image and game board on a two dimensional plane, depth is portrayed through an array of visual techniques and does not exist outside of the viewer or user's perception.

Text-based Sequential media are those that use words. Every game with a rulebook uses words and demands an ability to work with this media form. In the English language ideas do not exist in single letters, only the letter "i" has meaning in isolation. It is the combination, sequencing, of letters and then words that

are the basis for meaning. Even in Chinese where single characters do have meaning real communication takes form in the sequencing of characters into words and words into paragraphs.

Time-based Sequential media add the dimension of time to spatial media and text-based sequential media. The addition of time means a single image only has meaning within a sequence of images. One frame, one image, does not convey the same thing as an entire sequence or a connected series of sequence. Music is another form of Time-based Sequential media as it does not exist without time. A single note written on a page is not music, the sequence of notes which follow a time signature is music. It is through this passage of time that rhythm, pitch, timbre, tempo and harmony come into existence.

Convergent media break the bounds of time and allow spatial, text-based and time-based media to exist in the same information space. The dimension that is added at this point is interactivity. Interactivity implies control on the part of the user though the actual nature and scope of that interactivity depends on what the designer offers. There can be control over the appearance, actions and/or outcomes offered, but often interactivity is limited to binary choices and vending machine interfaces. Convergent media are actually not new, newspapers, books, magazines, and web pages are all examples of convergent media.

Computerized media introduce the dimension of intelligence into the media landscape. This means that users exercise some control over their mediated experiences and it becomes possible for the media to think, to offer assistance or opposition, and to make informed decisions about the user or their actions in the game space. Therefore it becomes possible to replicate, simulate and virtualize nearly every kind of machine, environment, system and process. Intelligence also brings the opportunity for immediate feedback from a system that has nearly limitless memory and rapidly processes rules and actions.

Networked media have everything available in Computerized media with the additional dimension of distance. This breaks barriers of all kinds and creates opportunities that while they are being exploited they are not yet fully realized. Networked media can be used in fixed places but are also mobile in nature.

In Unmediated - Direct Interaction the dimension of humanity is added to all of mediated forms of communication and play. Humanity includes a mixed bag of genetics, psychology, sociology and culture and brings the excitement of randomness and unpredictability to a game experience. Certainly humanity

exists in, and has an impact on, all the media forms that precede Direct Interaction but it is here that the combination of creativity, technology and humanity become the most powerful.

President is a game that can be implemented in many different media forms though it currently exists only as a board game including Spatial and Text-Based media. There is the game board, rules, votes, nomination cards, presidential question cards, chance cards, pawns and dice. These represent the factors of the real world and the physical presence of all players around the table create the social dynamic which makes the game fun. Adding time-based sequential media there are a number of possibilities that include the addition of DVD clips and associated challenges. Using time-based sequential media might also suggest the transformation of the entire game into a television game show, either studio-based using the amplified graphics from the board game and lots of questions, or reality-based a bit more like *The Amazing Race* or *Survivor*, without the capricious manipulation of the core game mechanics. But the game show version would certainly change most of the audience from active players into passive viewers. Once we add the dimension of convergency then it is possible to combine media forms and place the entire game on a DVD or computer. This opens the possibility of enhanced graphics and sound and perhaps the alteration of the game into a first-person adventure across the highways and by-ways of South Africa. Adding the computer dimension it becomes possible for players to be both real and products of artificial intelligence, and for the country, game space, to become a more interesting place where interactions beyond the players might take place. With the network dimension comes the possibility of playing opponents at a distance within the computer-generated space. And finally, when the game exists at the level of direct interaction, people are actually traveling around the country using a range of mobile technologies to enable them to play the game in the actual place. In fact this has more potential at the neighborhood or city level than it does at the country level, but it might be a game people would want to play and it could create an entirely new form of tourism.

Mechanic, Aesthetic, Poetic & Subjective Experience

The Mechanic

The game mechanic is the part of a game that separates it from a book, a movie, a photograph or even a conversation. Game mechanics involve the rules, actions and behaviors that players encounter when they are operating in the game space. The mechanic is the essence of a game and often the initial focus of game design. While the mechanic is often a subject of discovery for players in computer-based games, it is outlined and often described in detail in the rules of play for a board game. Salen and Zimmerman (2004)

call this the designed system of the game and say that it is the genesis of meaningful play. Game mechanics are often more effective when they are rooted in the social and cultural context of play. The best mechanic is the one that stays in the background while players enjoy the experience. Strategy, tactics and actions should be derived from players' goals and enable them to focus on how they operate within the system to win, not the restrictions defined by the rules. When players must, or are forced to, focus on the logic and structure of the rules they can lose interest in a game regardless of its other merits.

Salen & Zimmerman (2004) identify three kinds of rules: Constituative, Operational and Implicit. Constituative rules are at the mathematical core of a game. They are abstract and do not provide an explicit guide for playing the game. Operational rules are the kind found in rulebooks and instruction sheets for games. These are the "rules of play." They constitute the objective or legal understanding of game play. Implicit rules are unwritten and vary from one context to another. These are the rules for conduct during play and will certainly apply to many different games. Implicit rules are provided by the culture in which the game is played and the specific group with whom the game is played rather than the game designer. Which means in some places it might be okay to shout, dance and taunt your opponent when scoring points while in others that would be considered rude and possibly uncivilized.

The mechanic is key in establishing the identity of a game and separating it from other games. In fact this is one aspect of a games design that can receive specific legal protection in territories like the United States. Some argue that the mechanic in the form of the constituative and operational rules should be "exact and unambiguous" while others argue that some ambiguity in the specific rules can create higher levels of player engagement in the process of play. There needs to be enough specificity that the game can be played with little effort but enough latitude to make players a part of an emergent experience that can vary each time the game is played.

In *President* the constituative rules include the mathematical calculations for the number of votes available at a particular location—it includes the least number of moves between scoring opportunities in a particular party and the total number of required moves in the game—the placement of chance spaces on the board, the relative percentage of good and bad outcomes in chance, and the minimum number of votes required to obtain a nomination. The operational rules are the instructions printed on the chance cards and the rules of play. The implicit rules evolve out of the game play and the mechanic that allows opponents to formulate trivia questions and offers value for a player's willingness to be the center of attention. The

operational rules are actually very limited with the intention of allowing players to settle disputes and determine what is possible in the game space. In testing one player paid another to sing for him, an occurrence that was never anticipated in the design process.

The Aesthetic

The Aesthetic is the interface between the internal aspects of the game and the players. This is true whether we are talking about a board game or a computer-based game. A game must take on a visual form that makes it usable for players. "In games the level of interface serves the additional function of communicating between game-system and player. It can convey information acoustically, visually and haptically, providing the player with a feedback to his or her actions with clues about what to do" (Rusch, 2008, p. 25).

This is the point where designers discuss the colors that will be used, the visual tone of the game – high key, low key, bright, dark – the level of visual representation from abstract to realistic, whether or not to use 3D, what type of rendering should be applied to the backgrounds and the characters, what fonts will be used and when, etc. All of these factors will play an important role in the emotional response to the game as these factors contribute to or undermine the impact of the Poetic, the Didactic and the Hedonic features of a game. These visual, aural and haptic elements are all tied to the functional elements of the interface. The most important questions are how exactly do players interact with the game system and what amount of learning is necessary for successful engagement with the game.

Some basic rules of interface design are that it needs to be simple, usable, consistent, responsive and transparent. Simple means that it meets the test of Occam's Razor--that adding elements will not contribute to understanding or usefulness and that removing elements will not diminish the effectiveness of the interface. Usable means that it is possible for members of the intended audience to use the interface to play the game. Consistent means that once the interface is learned it will continue to serve the player each time the game is experienced. In computer terms, consistency is not in the placement of a button on screen it is in the function of the button, it must do the same thing every time it is activated even when it appears in a different place on the screen. Responsive interfaces enable the player to make the connection between their actions and immediate outcomes. The player knows what they have done and the impact that action has had on their position in the game. A transparent interface puts the focus on the game and not the interface. The interface enables game play and enjoyment and does not draw undue attention to itself as

the means by which the game is played. When people drink wine they want to focus on the wine and not the glass, every aspect of the glass, the interface between the wine and the consumer, needs to contribute to the user's understanding and enjoyment of the drink.

Some make the argument for utterly simple and convention-based interfaces that reduce learning of the interface to zero. While this is a commendable goal and might make every game easier to play it would leave players with numbed senses and apathetic responses to game spaces and play. A little learning and surprise will always add some excitement and interest and will be successful when it is well managed. "It must be granted that there is some value in mystification, labyrinth, or surprise in the environment…this is so, however, only under two conditions. First, there must be no danger of losing basic form or orientation, of never coming out. The surprise must occur in an over-all framework; the confusions must be small regions in a visible whole. Furthermore, the labyrinth or mystery must in itself have some form that can be explored and in time apprehended. Complete chaos without hint of connection is never pleasurable" (Lynch, 1960, quoted by Yellowlees-Douglans & Hargadon, 2004, p. 192).

The Poetic

The Poetic is the back-story of the game, it is the application of the abstracted game elements to a narrative that connects with the Audience through the Aesthetic and the potential of the Implementation to the Hedonic, or pleasurable, aspects of playing the game. It "provides the players/protagonists with goals, conflict and an element of uncertainty. From these narrative cornerstones arises dramatic tension, an experience that is sought and encountered in computer games and as well as fiction films" (Rusch, 2008, p. 24). "A narrative has an initial state, a change in that state, and insight brought about by that change. You might call this process the 'events' of a narrative" (Zimmerman, 2004, p. 156).

The Poetic is absolutely important in connecting the Mechanic with the audience. Chess, Go, Poker and most competitive professional sports are games that are abstracted from reality. Stories that exist with these games exist in the players and teams as they play, they do not follow a story as they play, a story is created as they pursue the goal of winning the game or championship. Does it make any practical sense to chase a ball that you cannot touch with your hands and try to put it through a rectangle that is 8 feet tall and 8 yards wide and guarded by an opponent who can use his hands? No, it only makes sense as a game where there are winners and losers. The most important story is applied from the outside of the game. These abstract games are in fact the most elegant and pure forms of play, but we live in a media and game saturated world

where few are looking for the next great pure game. People are looking for the next great fun game, and much of the fun is in the Poetic of the game.

A good story will not only increase interest in the game it will also make it easier to understand the Mechanic and improve the Dynamic of the game. "Not only does the narrative give extra meaning to the rules, but the rules help to perceive the narrative" (Salen & Zimmerman, 2004, p. 387). Without making any statement about their relative and critical value as art, a realistic portrait by John Singer Sargeant is much easier to understand than a cubist portrait by Pablo Picasso. One is representational and the other is abstract. A good story will also connect a game with a player through their interests, aspirations and culture. Apparently, everybody wants to be a millionaire and the chance to become president by winning a game is a pretty engaging proposition.

Here is an example of two stories built on the same Schematic, Mechanic, Subjective Experience, Aesthetic and Media, which one would you rather play?

> 1) Players will travel around South Africa and visit interesting places and score points based on travel themes. The farther players travel the more points they will be able to score and when a player has visited three places in three travel themes the player can choose to end the game and get bonus points or the player can keep traveling to claim more points. The player with the most points at the end of the game wins.
>
> 2) Players will travel around South Africa to visit places where they will collect votes and nomination cards. When players have 15 votes and a nomination card from a political party they have a nomination for President. When a player has three nominations they can choose to end the game or keep playing to get more nominations and votes. The player with the most votes when the game ends is the next President of South Africa.

The second story is more likely to attract people to learn and play the game. The story is stronger, less abstract and more like *Monopoly*, even though the game play is somewhere between *Risk* and *Monopoly*. Remember it is important to be able to frame the story in terms of games that have already enjoyed success in the marketplace.

The discussion of game narratives is heavily associated with computer-based games because of their many similarities with film. But this discussion informs game design and analysis regardless of the Implementation of the game. "Narrative experience in games can take two forms. There is the embedded narrative that consists of the prescripted moments and structures that are relatively fixed in the game. But the true strength of the games on the narrative level lies on the emergent narrative, the narrative that arises during play often in unexpected ways, as a result of the individual moment-to-moment game-play" (Rusch, 2008, 24). Environmentally situated games provide a good opportunity for the creation of emergent narratives that do not exist in film. "Environmental storytelling creates the preconditions for an immersive narrative experience in at least one of four ways: spatial stories can evoke pre-existing narrative associations; they can provide a staging ground where narrative events are enacted; they may embed narrative information within their mise-en-scene; or they provide resources for emergent narratives" (Jenkins, 2004, p. 123).

The Poetic is closely tied to the Mechanic. The Poetic puts demands directly on the game play so that when the Poetic changes there is a very good chance that there will need to be adjustments in the Mechanic. This was the case is moving from the original *Urban Excursion* abstraction to the campaign at the heart of *President*. The trivia cards and nominations were introduced as well as a final Presidential Question to end the game. These are major changes from the original Mechanic but the change creates a more engaging game experience that reaches a more focused and connected audience.

The Subjective Experience

The Subjective Experience is the pleasure that players get from the game. It is the emotional response of the player to the game, the consequences of the player engaging each one of the components. This is what some people call "fun," even though fun is generally a poorly defined term that has come to be used to describe almost anything. Yet, it is very true that the type of fun we experience with *Risk* is not the same kind of fun we experience with *Solitaire* or *Resident Evil*. LeBlanc (2004) has identified eight kinds of fun in relation to playing games:

1. Sensation: game as sense-pleasure
2. Fantasy: game as make-believe
3. Narrative: game as drama
4. Challenge: game as obstacle course
5. Fellowship: game as social framework

6. Discovery: game as uncharted territory
7. Expression: game as self-discovery
8. Submission: game as pastime

LeBlanc knows games and fun. He has led a workshop on game design at the Game Developers conference since 2001. It was in this environment that his concepts of Mechanics, Dynamics and Aesthetics were developed and refined. That workshop has included a paper prototyping exercise since 2004. Workshop participants develop paper prototypes for computer games that have already been created. Using their knowledge of a computer-based game and experience playing it, participants work in teams to create a simplified form of the game. The goal is to isolate the underlying structures that are at the heart of the game.

Similar to most of the concepts in this paper, the categories of fun are not mutually exclusive. A game experience is likely to provide more than one kind of fun for the players. Think about your own experience and your favorite games. Do you get different pleasures from different games? Do you get more than one kind of fun from a single game? Do you seek the same enjoyment from different games? Whether you are designing games or analyzing games, knowing yourself is a good first step to understanding how others experience the pleasure of a game and how that enjoyment occurs.

Game designers must ask what kind of fun they expect players to experience in the game. What is the pleasure that will be derived from play? How will the Subjective Experience play out? This becomes particularly important with meaningful or serious games because a sophisticated game player knows when the designer thought the learning or sharing was more important than the fun, and for most players the fun is the primary motivation to play. People won't play if their friends, or even a stranger, tell them it's not fun. Challenge, Discovery and Expression seem to be the most fertile ground for fun in the development of meaningful game experiences, but it is never wise to look beyond the possibilities presented in all forms of fun.

In the South African market it is imperative that Fellowship be a part of the fun generated by play. Most South Africans play board games for the social interaction they facilitate. Challenge or Discovery without Fellowship will not be embraced in the marketplace. *Urban Excursion* and its direct descendant *Skyline* focus on Challenge and Discovery. *President* includes these elements as well but creates the opportunity for

Fellowship through 16 "Street Performance" cards in the chance stack and the opportunity for players to formulate their own trivia questions from information provided in the game. The development of Fellowship fun in *President* has actually been fed into the design of *Skyline* with the use of "Street Performance" cards in the chance stack. These cards create moments of laughter in what appears to be an otherwise serious game about acquiring property in New York.

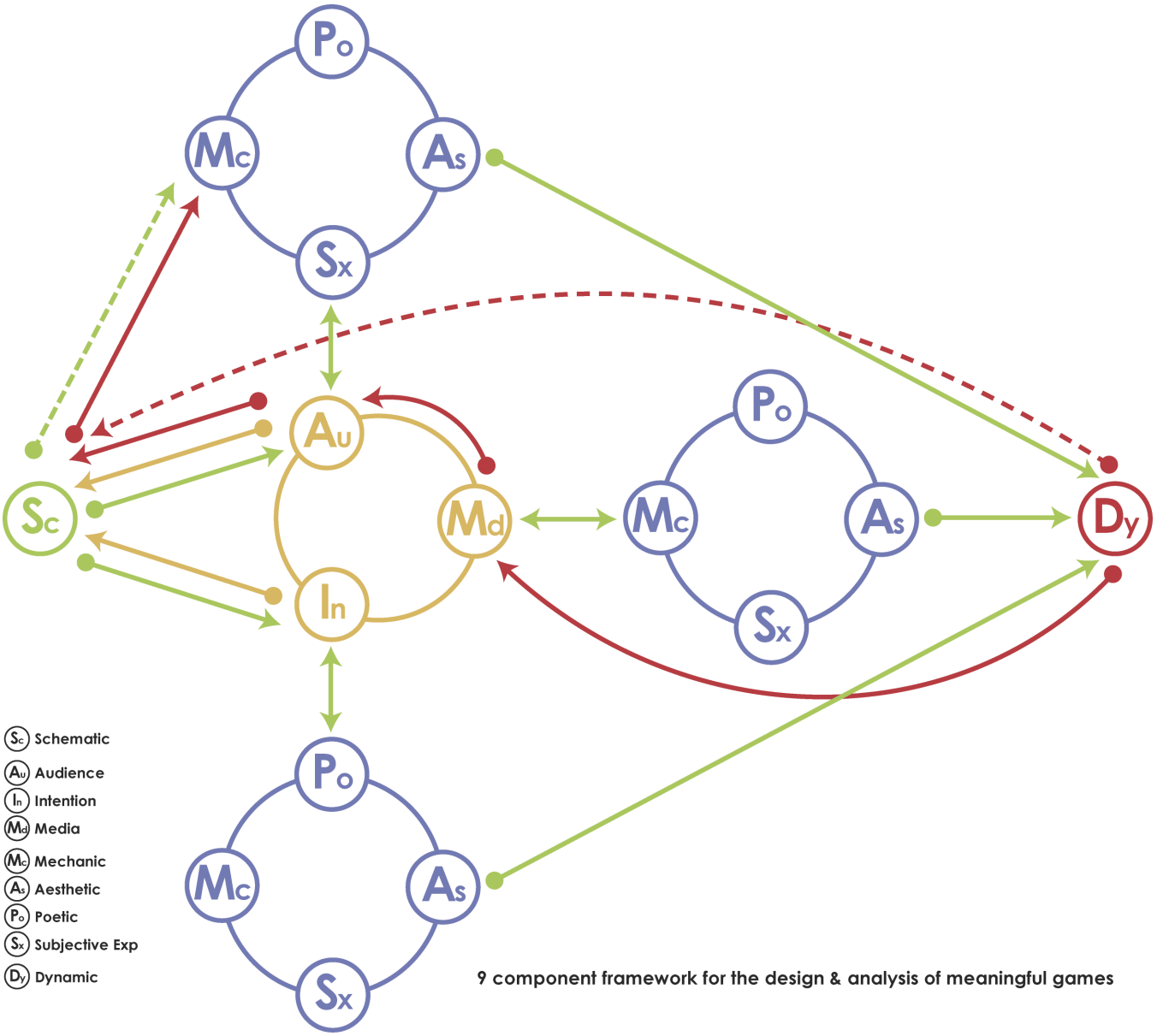
The Dynamic

The Dynamic is essentially the perception of the game after the other components have been put together, the way players interact with the game during play and the broad terms by which the game is defined. It is what the other components look like in practice. "The rules never solely determine the play of a game. The rules are always set into motion within an experiential context that includes particular players with their own levels of desire, skill, and expectation" (Salen & Zimmerman, 2004, p. 449).

The Dynamic tends to be the broad category for the game. Examples of these categories are strategy, chance, trading, trivia, role-playing, and first-person shooter. While these do not provide a specific description of how the game will be played they provide a quick and simple means of identification through association. If you make a board game and it has a locale or property elements the first question people will ask is whether it is like *Monopoly*, and they ask even if it looks nothing like *Monopoly*. *Urban Excursion* shared no *Monopoly* mechanics but it was based on a city so the question was asked. *Skyline* does have property trading elements and while they are not similar to the trading elements of *Monopoly* potential users will imagine they have an immediate understanding of the game through this association. These broad categories are not specifically useful in understanding the way a game is played but it opens the conversation and allows a discussion of how a game actually works.

Altering the Dynamic requires changes in the Mechanic, Poetic, Aesthetic and Subjective Experience and is the most useful when done according to the identity of the players. While sharing many design components, *Skyline* is a game that has broad appeal as a strategy and trading game and *President* has a limited appeal based on the fact that it is a strategy and trivia game. The inclusion of trivia narrows the potential audience because it is a difference that connects with, and appeals to, the people in the intended audience. *President* also enables players to make adjustments in the Dynamic through adjustments in the difficulty of the trivia questions. This is possible because the players are the authors of the trivia questions in the course of play.

The Framework



9 component framework for the design & analysis of meaningful games

The game design process for meaningful games will normally begin with the establishment of the Schematic as this involves the abstraction of the Process, System or Environment that is at the core of the game. The consideration of Audience, Intention and Media is the second stage of the process. This can begin at the point of Intention or Audience. The process of defining these components is iterative as a clearer definition of one will lead to a clearer definition of the others. At this point it will also become apparent which of the three components is the most important for the further development of the game. When Audience is the most important component in the AIM sector, then the MAPS sector will be engaged at the Subjective

Experience. When Intention is the most important component in the AIM sector, the MAPS sector will be engaged at the Poetic. When Media is the most important component in the AIM sector, the MAPS sector will be engaged at the Mechanic. The Mechanic, Aesthetic, Poetic and Subjective Experience are then processed iteratively. The developments at this point may require a return to the AIM sector for further refinement that will then lead to a re-evaluation of the MAPS components. When the process is complete the final step is the evaluation of the game and the emergence of the Dynamic.

There are other starting points in the process of game design but each component needs to be developed before the process is complete. It is possible for the process to begin at the point of the Audience, the Intention, and the Dynamic as well as the Schematic, though these represent more complex approaches to design than moving through the four sectors from the Schematic to the Dynamic. It is also possible for the process to move from the Schematic to the MAPS components through the Mechanic and then the AIM components.

When the Audience or the Intention come first then the iterative AIM process is carried out first, followed by the Schematic, refinement of the AIM components and then development and refinements of the MAPS components. Audience may be the first consideration when a gap is seen in the market and a particular segment of the market with great potential is not being offered appropriate options. The tween girl market is one that is growing in terms of earning potential and interest in games and could lead to a project that begins with the Audience. *President* is a game that fundamentally began with the consideration of an audience and a market. Intention is a less likely starting point but there may be instances when a game starts here. *Urban Excursion* grew out of the need for a research tool that engaged players in a non-violent strategic game experience. New York was chosen because the audience for the game would be residentially and culturally Asian and needed to have limited knowledge of the game environment. The media for the implementation is still intended to be networked as the final product will be a casual online game. From this iterative cycle the Schematic was developed and then the Mechanic followed by the other MAPS components.

Beginning the game design process at the Dynamic is not particularly suitable for the development of meaningful games. Starting at the Dynamic involves pure market considerations rather than the desire to create an engaging game experience, meet the need of an underserved market segment or teach some information, principle or technique. A possible scenario is that there are not enough first-person shooters

in the market place, so the game publisher comes to the designer and asks for one to be made. The process can then move to the consideration of Audience, as the Media and the Intention is already established, followed by the development of the Schematic and then the MAPS components. Audience may get some reconsideration in this process. It is also possible to move from the Dynamic directly to the Schematic and then the Audience and the MAPS components.

Moving directly from the Schematic to the Mechanic is a process of pure creation with consideration of the potential Audience as an afterthought. This represents the creative person who wants to create games for the sake of creation or the expansion of how people think about games, a bit like the artist who must express themselves on canvas in a personal way with no concern for the reception of their work. This approach to the design process can ultimately involve a careful consideration of the Audience within the iterative development of the AIM components, but Audience will often be an afterthought in this approach. This is a viable approach to the development of meaningful games. However, waiting to consider Audience will complicate the process and result in more significant revisions in the MAPS components after Audience is considered.

The framework from a research perspective provides an opportunity to understand the design process. But when analyzing a game as an artifact it is only possible to examine the components as artifacts. The results of working through the framework do not reveal the exact nature of the process. The details of the process can only be accessed from the people who were a part of it. This framework can provide a structure for design process inquiries and interviews. The components provide parts to examine and analyze.

Conclusion

People involved in game design and research need to recognize that games are as old as any known medium and a framework for game design needs to be developed without myopic devotion to a single mediated form. A view of game design that includes a broader range of media implementations will improve the possibility of developing stronger computer-based games because the medium will not be the beginning and end of the process. Hopefully this framework will provide game designers with a process, concepts and vocabulary that can be used to discuss the relationships between games that have been implemented in very different ways and to discover new ways to connect with players and create compelling game experiences.

The components in this framework can go beyond design and serve as a basis for analysis and research. Researchers can use the nine components as variables in their explorations of design and effects. Using what has been offered and further refining the definitions of each component will give researchers points of control and manipulation in laboratory-based effects studies. The components can be used as points of comparison in game content studies. They can also be used in developing survey instruments and identifying the most important aspects of games in the minds of players. Currently we are focused on game features and player-perspective as the basis of analysis, e.g., the Dynamics: board game, card game, first-person shooter, fighting game, etc. Using a more detailed and varied structure will enable us to learn more about how games are created and ultimately inform our understanding of how they are received.

The framework involves nine parts of the game design process: the Schematic, the Audience (Players), the Intention, the Media, the Mechanic, the Aesthetic, the Poetic, the Subjective Experience and the Dynamic. Considering these components and the procedural framework they form will inform the design process and provide a consistent basis for game analysis and study. It is important to isolate factors within games when we want to analyze the impact of the game on people. It is also important to isolate and analyze these components in the attempt to create games that are significant, interesting, engaging, meaningful and enduring. Learning more about this framework will make it possible to diversify and invigorate game design. Putting the focus on the framework will open the door to innovation that goes beyond the quality of the rendering and the number of cool weapons available on the second level of the game.

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