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Visual Metaphor in Games of Chance:
What You See is What You Play

Stephen Andrade

Visual images have been a key element in the development of wager-based games. The legacy of visual metaphor in gaming can be traced through paper ephemera such as playing cards and lottery tickets. Both paper and printing technology ushered the age of wide spread playing opportunities in the 19th and 20th centuries. Modern play behaviors have given way to Postmodern gaming norms in digital space. The digital age has presented a new set of challenges for gaming architecture in wager-based play. Action research in prototyping games is beginning to reveal a new and different set of game characteristics.

Keywords: digital games, computer graphics, pictorial modernism, lottery, visual metaphor

Introduction

Gaming, gambling and visual material have been part of the human experience since recorded time. Before widespread literacy, visual metaphor was the first gaming interface and has remained a potent form of game experience.

Fundamental design elements such as pictograms, representations, graphics, icons, symbols, figures, line art, composition, layout and color have played a continuous central role in the story of the game. Visual elements have been carefully selected and filtered through cultural context so select images have potency and meaning for players worldwide regardless of geographic region. These design elements and the images themselves create a sort of story or visual narrative in the mind and emotional experience of the player. At each play of the card, the touch of the lottery ticket, or the trip to the game board, the player constructs a vivid internal story around these finely crafted visual metaphors. Combined with the promise of winnings, the visual narrative creates a compelling motivation to play. To see it is to play it. Win or lose, the visual narrative appeals to the desire within; the charmed player plays again.

Humans have had relationships for centuries with paper-based images both in game play and other facets of daily life. As simple as that may sound, paper is a complex artifact in the human experience. From the time of Gutenberg in the early 1400's, paper was the singular non-verbal source of information and communication. Long before words, images of people, places and objects delivered rich meaning to the viewer.

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More importantly, paper with images and text is also a source of *authenticity* and *agency* – the presence and possession of paper gave meaning and existence to the other things it represented. Often that 'thing' was printed right on the document. Paper was and to some degree still is, the one place that a visual metaphor came to life. Paper was the platform upon which the narrative and story was transmitted. From the earliest times of the simple screw-type printing press to today, paper remains a tactile and haptic experience in the world of game play and gambling.

Awash in a world of paper, symbols and the desire to play, gaming and gambling became a distinct field where it all coalesced. As we will see, this visual metaphor and internal narrative has been used for centuries to entice, inform and entertain the player.

Aside from the governing rubrics of traditional gambling games, the use of visual metaphor is the one other constant factor in an industry that is faced with the enormous challenges in the 21st century - challenges that include a disappearing demographic, another demographic group that is largely disassociated with the current wager-based games-of-chance experience, and a generation consumed with its' digital addiction. The experience of the immersive digital world is further changing the rules of self-perception, behavior, and game playing itself. As we move deeper into this digital space, understanding the influence of Postmodern self and expression of play is critical to success of any game of chance.

A Paper World

For centuries paper was the main form of communication. Rich or poor, the world was awash in paper. Imagine a world without radio, television and the Internet and you might begin to understand just how important a slip of paper could be.

As printing technology improved, so did the complexity and importance of paper documents. Paper was used for virtually everything. Religious indulgences, military orders, "particulars" (or inventory) were all recorded on paper. Social business was brisk as paper was used for invitations to excursions, aeronautic displays, soirees, criminal trials and funerals (funerals were considered high social ceremonies with extraordinary trappings of gloves, medallions, sashes and booklets). Unusual by today's standards, orphan announcements, execution invitations and warnings against selling beer were all printed and distributed on paper.

In the "ticket" form and function category, trade cards, receipts, pocket watch covers or dust excluders, tobacco labels, and of course lottery tickets were small pocket sized paper-based visual displays, some with finely crafted artwork.

Paper tickets, in the pocket size and form, gave people an object to think with. This concept, popularized in the works of Sherry Turkle from MIT, suggests that an object to think with, when regarded by its owner, produces realm of cognition and behavior not experienced in routine reality.

In some sense, certain objects with paper artifacts among them, combine mythic power and symbols and create transformative experiences for the holder.

Fig. 1. Aeronautic adventure, the rich visual tells the story. c. 1851 Source: Lewis, Printed Ephemera, p 116.

For instance, the holder of a lottery ticket will often relate, in great specific detail, what he or she will do with the money they will win with that ticket. The act of holding the lottery ticket invites the player to fantasize. A humble piece of paper with a few symbols, text and numbers is a powerful totem – or an object to think with- for players who must 'suspend disbelief' regarding the odds of lottery games. On one hand, it was a plain piece of paper, on the other, it represented greater possessions, personal transformation, or better yet, earthly dreams come true.

Visual Metaphor and the Playing Card

In order to achieve this special status of an object to think with, paper had to be embellished with visuals that would unleash the internal stories and spark the dreams of the possessor. Among many forms of paper artifacts, nothing tells the story of visual metaphor through gaming on paper better than playing cards. Numerous books and catalogs tell the history and development of playing cards through the ages. A golden period of playing cards as a paper-based ephemeral art form are the 17th, 18th, and 19th century France.

France was a hotbed of card playing during these centuries. Each region and city had its own twist on what visual metaphors would capture the imagination of the players. Many examples exist and each set tells a story with its chosen visual language. All used common and recognizable imagery for the population it served. Some lively examples include images of royalty, elected officials, military figures, religious figures, cherubs, and grotesques (the term used for people with physical deformations. The fascination with grotesques was widespread; Leonardo DaVinci dedicated a whole series of sketchbooks to their likenesses.)

The visual narrative of the playing card is a rich and diverse history. Considering the range of visual storytelling in French playing cards it is easy to imagine that while providing a function to play a game of chance, the playing card was also a visual platform for social parody and commentary, sublime artistic style. There is an element of irreverent delight and satire in a set that combines the mayor's family with the village pauper and the peasant farm girl cousin from the provinces. Some visuals entertain and titillate showing undergarments, glances of woman's bare skin, and young children using pottery to perform their toilet. One set portrays Moliere's comedic opera *Monsieur de Pourceaugnac* including the dance of ene-

Fig. 2. Grape motif playing card, French, date unknown. Source: D'Allemagne, H. R. (1906). *Les Carte a Joure.*
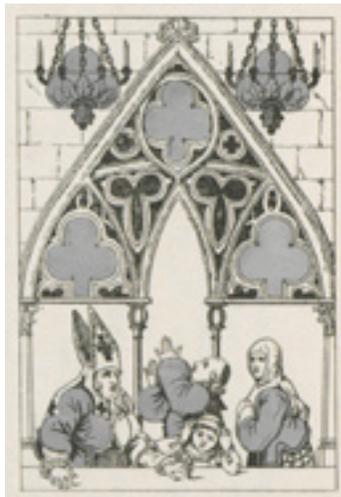

Fig. 3. Same deck, the grape motif is appropriated in the stained glass window. Source: D'Allemagne, H. R. (1906). *Les Carte a Joure.*

mas. Some were just joyfully entertaining, providing a glimpse of people at play on stilts. Others express a certain global awareness in accurate portrayals of indigenous people, flora and fauna from faraway exotic colonial outposts.

Of course some are very sophisticated in use of visual symbolics. One set uses a grape cluster, clearly an important product in the vineyard-rich French provinces (Figures 2 and 3). The grape cluster is traced, profiled and appropriated as theme to reappear in stain glass windows, stone arches, the shirts of workers and the robes of priests. This is a venerable and honorable artistic treatment of a visual element that elevates a common playing card to an artifact of civic pride and vital local commerce.

Cards with visual metaphors were also a platform to educate. After the French Revolution, war heroes and heroines were portrayed on playing cards. In addition to figures, battles, locations, weapons and symbols of the revolution were also used. Clearly these cards conveyed a sense of patriotism aimed at reminding, perhaps educating, the player of the sacri-

fices made to save and unite a country.

The ever-changing playing card eventually transitioned into is familiar visual identity of royal court personas as we know it today. Gamers of their time saw visual metaphors that they recognized and could relate to. For gaming industry at large, the widespread visual experimentation and artfully produced visual storytelling of playing cards left a revealing legacy that resonates today – what you see is what you play.

Visual Metaphor in Lotteries

Like cards and other gaming, lotteries as a form a gambling play have been part of the human experience for centuries. The notion of throwing 'lots', pebbles, sticks, or bones to determine destiny is part of creation myths, Greek history, and biblical legend. The practice of lottery was widespread in all civilizations as it channeled the divine, chance, destiny in a random yet purposeful throw. The concept of chance and sacred divination as a game of drawing lots was popular during the Roman Empire and was practiced in the courts of medieval France. Chinese practiced a form a lottery using 120 characters, which eventually became the game of Keno today. A popular lottery-like family board game in Latin American, Juego De Loteria, has been played for centuries.

A lottery, much like the playing card, used paper and imagery to communicate to the player. Historically lotteries were used to fund projects for the social good. Portraying the project on the ticket made sense in time before widespread literacy.

Public works, civic infrastructure, schools, hospitals, orphanages, were all funded from the proceeds of a lottery draw or game. In Europe, where lottery gained popularity after migrating from the eastern world, lotteries funded churches, roads and bridges, and poor houses. Slightly less tangible but equally important to an emerging civilization, armies, revolution and wars including components of the American revolution, were funded by lottery profits.

In the old world, posters, broadsides, books, and pamphlets all offered announcements and information about forthcoming lottery games. One poster shows an image of the traditional knucklebones along with dice and animal figures. A spiral race game used in a lottery-like game shows images of ancient Greece to entertain the player. These images are a reference to a game tradition that persists from ancient times.

There is no typical lottery ticket, though they seem to fall into two camps. One type is a text and number composition, with official language, dates, numbers and records of the draw. The other type is more visual, symbolic, artistic and aesthetic. Both are designed to entice the player and document the wager, but the visual example offer an instance of historical insight. Whatever the visual metaphor, these modest surviving slips of paper reflect the norms, values, and behaviors of the people at that time.

One exceptional example of early lottery art is

Fig. 4. Juego De Loteria c. 1905-20, UNLV Center for Gaming Research collection.

the Latin American game Juego De Loteria (Figure 6). The Juego De Loteria is a game of chance similar to bingo and lottery. Cards with images are drawn and players match on a corresponding game board till a sequence is achieved. An early version produced between 1909 and 1920 is an impressive display of engraved symbols. The symbols are recognizable by adults and children alike.

The Juego De Loteria board is composed of 38 blocks of pictograms. The most popular categories featured are domestic objects and animal representations. There are also categories for humans, symbols, and flora. Animals include a bird, donkey, coyote, owl and parrot. Domestic objects include hat, lamp, hot air balloon, boot, and a printing press. The Jeugo De Loteria delves deeply into symbols of meaning, many of which transcend Latin American culture such as the devil, a skull and cross bones and celestial icons. It is a game still played by families today, though many of its images are updated to reflect contemporary taste.

Examples of lottery tickets from the past do exist, they just seem to be fewer than playing cards, board games and other gaming ephemera that have a more collectable nature. However some interesting examples point to the role of visual metaphor in constructing the 'big-win' dream narrative that we share today.

Other examples illustrate how pictures, symbols, icons and other visual representation appealed to illiterate players. At anytime in past centuries, and into the 20th century reading was not a ubiquitous skill as it is now. As populations grew, lottery and other games of chance grew in their implementation by governments hungry for revenue. Appealing to the non-reading masses was critical in the success of any state-sponsored game. From then to now, what you see is what you play.

Select Examples of Lottery Tickets

In 1821 the U.S. Congress authorized a lottery. The ticket is representation of officialdom at the time. It features the eagle with it's wing spread; a national icon recognizable today. The eagle perches with confidence upon an assemblage of cannons, cannon balls, and a national shield. Flags are draped in the mid-ground, while the rising sun washes a glow over the entire scene. The ticket is a bold representation of the icons of American patriotism and surely an effective promotion for a country inured with its growing military strength.

The legislature of Pennsylvania hosted a lottery in 1806. While it is an attractive example of typography

of the time, its also an example of the creative funding sought by governments. The lottery was to bring "new and useful discoveries" to the state. Among them "an important improvement in the art of manufacturing Sago (a type of flour), Starch and Hair-powder from Potatoes...this art, so essential, should be extended to every family", and "An important invention for reducing off-cast worsted and open wrought woolen clothing to wool" and "An important discovery of a cheap and lasting composition for manufacturing ornamental mouldings". Two centuries ago states were competing to incubate new technology to improve their economy and create jobs for citizens.

Lottery drawings were often social affairs of the highest order. Concerts, banquets and other forms of merriment often accompanied the live stage show of the lottery draw. That was part of the appeal of the lottery often advertised on the ticket itself. Lotteries were not only social affairs, but social engineering too.

In 1901 Oklahoma offered a land lottery. At stake were 160-acre parcels of free land, some parcels estimated in the value of $30-50,000 dollars. The land lottery was a booming success. Over 165,000 people entered the lottery. The draw lasted for 4 days with 30,000 people in attendance. In the end, 13,000 people won land as the lottery ushered in pioneers to homestead the land. The dream to win big found a new role in settling the American west.

Mid-20th Century Lottery Ticket as an Art Form

Lottery tickets are a type of art form as a few select examples will show. The composition and aesthetics of the diminutive ticket reflect the visual style of its time as well as the printing technology required to produce them.

The early 20th century saw creation of new graphic design movements. The new century inspired new design thinking and style in the form of Modernism. As the industrial age from the previous century left its mark in areas such as typography and print technology, Modernism sought to bring a new originality and symbolic complexity to visual communications. It was the new age of complex machines and immensely productive technology, particularly in the field of printing.

Mathematics, geometry, grids, visual structure and patterns influenced visual designers. Designers of the new century had an overriding belief that art was part of commerce, industry, architecture and craft.

Their work illustrates this belief. The streamlined visual energy of the Art Deco movement was still a design influence. But it was the new generation of Pictorial Modernists who focused on the total integration of text and visuals to make the message more powerful and persuasive. Even as print and color production technology improved through the years, the Pictorial Modernist design approach would last for decades. Who these game ticket designers were now is lost to history. Their legacy lives on in lottery tickets that survive and in a pervasive style that exists today.

In 1939 the national sweepstakes grand prix horse race in Paris illustrates Pictorial Modernism with a touch of Art Deco (Figure 5). The title banner with scroll embellishments houses the text with an Art Deco influence and exaggerated kerning (space between characters). The use of kerning (space) in this instance suggests luxury, and the ticket embraces a high-lifestyle symbolism in horse racing - the sport of kings. Embedded in the scroll is a neo classic profile of the winged god Mercury, a symbol of speed and good fortune in the mission. A modernist layout features an image frame imposed on a field of color. The overall background field is one of faux currency and grid pattern imparting authenticity and value to the ticket. Positioned in the place of honor is a stylized image of colorful racehorses and jockeys competing on a period racetrack. The layout, when taken in its entirety is a compelling and informative. This was meant for an audience who appreciated the touch of wealth in printed storytelling.

Another fine example of Pictorial Modernism is the 1948 Mexican international sweepstakes for schools and hospitals (Figure 6). A bold and confident portrait of a female nurse looms forward, front and center of this ticket. The nurse makes direct eye contact with the viewer. That pose is somewhat provocative, as she seems to be challenging the viewer – play now! She is wearing a traditional nurse cap and uniform with red crosses on her collar. There are several muted pastel colors used in the ticket which overall is highlighted by a warm gradient glow behind the nurse, giving her a saintly and benevolent appearance. An artful combination of images, multiple fonts styles and sizes complete the visual metaphor. Appealing not only to the monetary 'dream' quotient of the player, but it is quite easy to decipher that this lottery is intended to benefit fellow citizens in need of care.

Hospitals and orphanages were common beneficiaries of lottery proceeds in the early to mid 20th century and ticket designers did their best to tell (and sell) the story through pictorial modernist approaches. A colorful 1942 French lottery ticket depicts rosy-cheeked young girls and boys in an orphanage. The children, clearly wards of the state, are happily eating and drinking from bowls being served by a woman in a nun or nurses habit.

The French ticket illustrates bright tables that are adorned with sunflowers. Nurses are attending the children in careful detail. In a background frame a cow is being milked and cans of milk wait to be transported. This ticket is a story of care and nurturing for orphan children told through positive imagery, color and composition. The subjects of the theme are irresistible. Who could refuse purchasing a lottery ticket to support this vision of care for the less fortunate? Given the 1942 date of the lottery it is ironically optimistic in a dark period of French history. Perhaps it was the visual portrayal of abundance for orphans that lifted the spirits of the population.

Fig. 5. 1939 Race sweepstakes presents pictorial modernism with a touch of art deco. Source: GTECH Corporation "Lottery -- Art & Science."

Fig. 6. Mexican schools and hospital lottery, 1948. Source: GTECH Corporation "Lottery -- Art & Science."

Orphans and children often take center stage in the promotion of lottery ticket design and composition. A 1943 Anti-Tuberculosis campaign features a mother and child gazing wistfully from their frame to the viewer. A visual narrative compels the purchase of the ticket to save the child.

Orphans played a role in the execution of lottery games. Today in Spain, orphans are selected to pull the numbers from the drum for the annual national lottery "El Gordo" (the Big One). "El Gordo" features a live televised event of the orphans pulling lottery numbers on Christmas Eve. It is civic communion and unity through gambling at its best.

Oddly enough, most state sponsored lotteries have lost this dimension of civic benefit in lottery play. In a few states lottery proceeds directly benefit higher education or early childhood care. But for the most part, lottery revenues to the state invisibly disappear into general funds. The public has little or no knowledge of how the lottery is assisting the citizens other than some vague notion of tax relief.

Anecdotally, history has demonstrated that citizens rise to the occasion if the civic need is understood. For instance the Sydney Opera House was built on lottery proceeds. In the state of Georgia lottery revenue funds a college scholarship to any high school student with a "B" average or better. When the city of London was selected to host the 2012 summer Olympics, the United Kingdom dedicated lottery proceeds to support training Olympic athletes. British athletes came in 3rd place overall with 65 medals to their credit (up from 47 and 4th place overall in the 2008 Olympics).

The Rise of Print

Of course, Pictorial Moderism in lottery ticket art and design would not have been possible without the printing technology to produce it on a mass scale. The growth of organized state sponsored games of chance, to some extent, parallels the development of modern mechanical print infrastructure.

Printing has been a tradecraft for centuries with simple engraving, inking and transfer to paper through contact and pressure. The screw press in the 1400's gave printers, like Gutenberg, the opportunity to print repeated pages, be it at a very slow rate in the single numbers per day. The oldest dated piece of printed paper ephemera is the "Mainz Indulgences", printed by Gutenberg in 1454, two years before his famous bible. It is likely that engraving and print tradesmen were printing paper, playing cards, and

other pieces before that.

As plate transfer technology improved the number of impressions or pages per day increased as well.

It was a combination of technologies such as improved metallurgy, machining, manufacturing, paper production, ink technology that advanced the print industry. But nothing compared to the introduction of power – steam and then electric – to transform printing from a guilder's craft to a form of high-tech mass communication.

The metric of printing technology is how many pages per hour can be produced. Of course with human powered screw and lever-action presses, it was measured in pages per day. Printing technology began to evolve quickly during the industrial age of the mid to late 19th century. Around 1830 the invention of the cylinder press rapidly advanced the page per day count to the 1000 range. The cylinder, which held and rolled the paper over the inked original plate or letter tray, matched with moveable beds saw that figure rise to the 2000 page per day range. By the 1860s, multi-color, multiple cylinders, rotary press and advancement plate technology saw a leap to 8000 "papers" or multipage (8-16 pages) newspapers *per hour*.

By the late 19th century. the United States saw the explosion of the daily city newspaper – often several editions per day – and massive printing presses were essentially print factories. At the height of this period in 1890s, multiple cylinder presses were spinning at 200 revolutions per minute, weighing 58 tons, creating 90,000 newspapers – printed, cut, pasted, folded, counted and bundled per hour, and consuming 52 miles of paper every 60 minutes. With 'each copy containing the epitome of news of the world in the preceding 24 hours' (Hoe, p. 62), it is easy to appreciate the impact print, literacy and mass communication had on printed ephemera. The demand for printed information, in the form of newspapers and other material, generated an exponential expansion of news organizations and print material. The miraculous explosion of print technology fueled the industry, but like so many paradigm shifts in the establishment, no one could see the signs of change on the horizon.

Modernism and Game Play

With the rise of printing technology came vivid examples of lottery tickets and the mass marketing of lottery games. State sponsored lottery quickly became a 20th century modern commodity and fountain of revenue for state budgets. Lottery play became an almost religious ceremony for dedicated players. A generation

of citizens would with routine predictability, march to the corner grocery store to by milk, bread, cigarettes, a newspaper and a daily lottery ticket.

Of course today, traditional newspapers are disappearing at a rapid pace. Big box mega stores in distant suburban plazas have replaced corner Mom and Pop grocery stores. Smoking is now defined as a new anti-social behavior. The question is, like newspapers and corner grocery stores; can a paper-based lottery ecosystem survive in this new age digital environment?

Modern versus Postmodern

The rise of print and game play as a routine commodity reflected modernist notions, concepts and perceptions of society. Citizen game players in Western European countries and the United States were loosely organized by the modernist conventions of the time. By modernist principles an average citizen's experience was logical, authority was centralized, time moved in a predictable linear way, one's self defining characteristics typically included class, age, education, trade, income, religion, political affiliation and so on.

Modernist principles governed the typical awareness and perception of the surrounding world. Daily interaction was based in reality ruled by calendars, clocks, schedules, seasons, currency, rituals and ceremonies. The concept of self-awareness was controlled and regulated by social mechanisms and structure. Experience was based in real time and tasks generally performed in a 'one-at-time' rhythm. Most people were wedged in one place with little mobility either geographically or socially. Age, gender, race, religion were concretely defined, with little to no option for change.

Postmodernism and Gambling

Of course today in early decades the 21st century, experience has changed dramatically. The phenomenon that was the urban daily newspaper is all but extinct. Paper, while still of some importance, is rapidly being replaced by digital devices as the artifact of choice for many routine daily transactions. Most people could not imagine life without their smart phone. The habits, values, and behaviors of digital citizens now influence behaviors of institutions... lottery, gaming and gambling among them.

The nature of game play has transformed as well from paper to hand-held digital devices. For game play and many other aspects of daily experience, we have entered a Postmodern age through the portal of immersive digital space. This new experience of self, perception, community and play will help define the nature of wager-based games of chance. The visual metaphor will remain a compelling aspect of play, but so will other facets of game experience valued by digital natives in the community of players.

Postmodern Principles

The Postmodern precepts challenge almost every modernist era of convention to the core, and by doing so, redefine the environment of game play for the digital natives.

Experience is no longer based on schedules or calendars, experience becomes hyper non-linear and fluid. In digital space the world is not logical - it is opaque at best. Authority is not centralized; in the digital world there is little evidence that any single authority is in control. The self is no longer defined by conventional categories; the self is a mix of archetypes, avatars, and graphic representations. The self may not even be human; it could be a mix of animals and creatures. Interaction is not face-to-face, but rather through technology mitigated encounters. Race, age, gender, religion, socio-economic status have no bearing on the perception of self – as the old cartoon says "on the internet, nobody knows you're a dog." In spite of this altered playscape, digital natives who are gaming are loyal, community focused, inquisitive, and sensitive and retain a sense of individuation. They identify themselves as distinguished from others, and they differentiate themselves in many ways.

Postmodern principles in digital space turn reality and experience around and shake it up. Time is no longer a linear metric; time and space can be overridden. Tasks are no long singular serial events; multi-tasking is the norm. Rather than being fixed in one place, digital natives can be instantly transported to exotic virtual locations. The digital ecosystem is not age centric - age doesn't matter.

Sherry Turkle, a social scientist, professor and author embedded at MIT writes in *Life on Screen* that "Virtual life in digital space is inherently different – a fragmentation of identity, a multiplicity of self, heterogeneous." She goes on to say "the virtual word has become a significant social laboratory for experimenting with construction and reconstruction of self in a Postmodern world." This notion of social experimentation, of course, can be observed by anyone with access to a high school or college student with a smart phone.

Certainly, the wager based game industry and the governments that commission games are not blind to this changing digital ecosystem. In December 2012 the U.S. federal court announced that it is not necessarily illegal to gamble on line. While not saying it is absolutely legal, the court sent a message that some types of wager-based games of chance could be played online. The states, the governing entity that regulates and implements gambling games, are beginning to test the waters with some digital options for gamblers. Nevada, securing its leadership in gambling passed legislation in 2013 to legalize online gambling. New York and Illinois are experimenting with facets of online gambling. Many companies and countries, particularly those based in Europe have been offering online gambling for some time. But this doesn't really address the issue of engaging digital natives, much of the online offerings are just an electronic version of conventional games such as poker.

One of the tenets of the Postmodern era is; if you can find a rule, break it. While Federal Court ruling is a modest clarification on an old law, it will surely inspire some breaks in the traditional rules of gambling.

Regardless of Postmodern prescriptions, society is not ready to throw 500 years of convention out the window, but the digital landscape is a tempestuous and tempting space. It has changed much of the way we acquire, listen to and manage music. Our television habits have changed to reject appointment based viewing. Production of entertainment has shifted from once mighty studios and corporations, to individuals with a hand held device broadcasting through YouTube.

It was not long ago that sharing music files over the Internet (Napster) was considered a subculture, a menace, and even piracy of legitimate intellectual property. But with music, like other industries, we have witnessed the fringe move to the mainstream. With that in mind, wager-based games of chance are prime targets for a "postmodernization" make over.

Action Research in Gaming

There are characteristics that come along with the makeover that digital natives desire in the gambling game space. For the past several years I have been conducting action research at Johnson & Wales University in collaboration with GTECH, the worlds leading architect of gaming solutions for the wager-based game industry (www.gtech.com). We have worked closely with over 100 advanced undergraduate students in graphic design, software and hardware engineering, and business and marketing.

Through an experiential course, students have worked on interdisciplinary teams to answer research questions for the challenges facing wager-based games of chance. The primary question is "what games and features do digital natives look for in wager-based gaming"? These teams have been mentored by a wide array of senior professionals in the gaming industry and various academic disciplines from marketing to sociology. Students have conducted field observations of gambling both in real and virtual space, domestically and internationally. In the past five years students have produced over 30 prototypes, whitepapers and presentations for industry leaders. Many have gone on to prominent career positions in the industry, many more have interned at various companies working in various gaming projects.

The action research in the course and projects has lead to identifying traits or characteristics of games that appeal to digital natives. Combined with powerful visual metaphor – often appropriated from popular media and entertainment culture - new games that express these characteristics seem to have the 'x' factor of popularity when it comes to playing and wagering.

Gaming Characteristics

Based on research and prototyping, these gaming characteristics appear valuable to digital natives;

- technology mediated play space
- authorship
- agency
- visual appropriation
- social calibration and collaboration

Technology Mediated Play Space

Digital natives prefer games that are technology based, reside in and played in digital space. Games must be multiplatform, functioning on smart phones, tablets and larger computing formats. Along with residing in digital space, other aspects of the game should be digitally mediated. Activities such as transactions, connectivity to relevant other spaces and information, relationship management, connectivity, transactions, have to be part of a feature rich environment.

Authorship

Digital natives as players wish to feel some sense of authorship, customization, ability to renovate, influence, impress the nature and flow of the game.

They don't want to simply play someone else's game, but customize it to suit their habits and behaviors. There is an element of opposition in this attitude, and it may work to the advantage of game creators to go a little 'postmodern' in game design.

As part of the research student project teams worked on re-imagining a popular new game out of the United Kingdom called GeoSweeps. This is a classic lottery game with a new geo-mapping twist. Instead of just purchasing random lottery numbers, players could purchase map coordinates on any location in the UK. The appeal to players was that one could purchase coordinates for one's home, local park, birthplace, favorite historical site or anywhere. Any coordinate that registered on a google-like map could be bought and played. It appealed to digital natives in that it required a smart device and a basic knowledge

of digital maps to play it; a familiar visual metaphor. If your coordinates were chosen in the draw, you win. In this game you wanted your location to be identified and chosen.

One student team prototyped a thrilling postmodern twist on the GeoSweeps game. Called "HideOut" it featured an animated Zombie invasion (Figure 8). The winning strategy was to keep your coordinates undiscovered or essentially hide from the Zombies. In a sort of "last man standing" theme, players watched in horror as Zombies consumed their map. Players squirmed in agony hoping that the randomly marching Zombies would leave their coordinates alone. A good visual metaphor and animation provided drama, fun and a decent wager-based game.

Fig. 7. Student research team presenting game prototype to GTECH staff. Photo courtesy of the author.

Fig. 8. Hideout, a zombie game prototype by university students. Photo courtesy of the author.

Agency

Digital natives want to experience a sense of agency in their game play. This notion of agency means that play is purposeful and goal directed activity related directly to the self. It may mean that one has the capacity to act on one's behalf as new or different life or machine form. In digital play land, it may not be the real 'self', but an agent representing self as an avatar or other thing. However it manifests, agency bonds intentional action to the subject.

The concept and practice of agency is easily observable in the subculture world of 'CosPlay' or 'costume play'. This is an emerging popular trend where participants create costume characters and play out story lines in LARP-ing or 'live action role play' at meetings and conferences. The character is based on storylines and costume while the self is still at the core. Equally important, the culture of CosPlay is creating new forms of play and game architecture. While not wager based gaming per se, the activities of the fringe generally migrate to the center.

Visual Appropriation

Digital natives are a generation of samplers. They have grown up with the technology and skill to copy, cut and paste virtually anything, especially things that come in digital format. They are expert users of powerful editing tools. Whether it is sound, video or something else, digital natives like to sample and recreate pieces to their liking. Regrettably this practice of borrowing element to create a new piece is often done without regard or respect for the source material. Sampling may not be as onerous as it appears though, for what comes out of this activity is power personal metaphors. And appropriation has a tradition in visual metaphor and gaming, as we saw with playing cards.

Visual appropriation is often performed under legal agreements and licensing. It is not unusual to see a sports or entertainment celebrity as part of the visual metaphor for a game. Stroll through any casino slot machine hall and you will see numerous examples of popular media turned slot machine interface (think Wheel of Fortune.)

Visual appropriation may not be as sinister as it appears but it certainly sets the stage for visual metaphor and play. In our research one very successful prototype was called "Flip Off" (Figure 9). This game pitted a face-off of brands, with Coca-Cola versus Pepsi, McDonalds versus Burger King and so on. Each pairing had odds associated with it, and players would cast their vote-wager. Games ran quickly to keep the play action going. Winners and loser elicited loud screams and reactions. Game play was fast a furious and stimulated lots of emotion and chatter depending on brand loyalty.

Social Calibration and Collaboration

Digital natives like to collaborate. They are very busy monitoring what each other is doing through various technology mitigated contact points. Tweeter, tumbler, instagram are just a few examples. These forms of collaboration offer provenance to their network of contacts.

When it comes to gaming, digital natives are indeed competitive. One constant feature that comes

Fig 9. Student game designer presents a 'versus game' prototype – Apple or MS Windows? Photo courtesy of the author.

up in undergraduate research and prototyping is a leader board feature. Digital natives want to know where they stand compared to others and want others to know their status as well. It is a form of social calibration, a mark of recognition.

In most research teams, students were surprised to learn about the revenue streams of lottery games domestically and internationally. Many had no idea that funds were derived from the lotteries to support specific causes. This concept ignited a wave of 'dial in your charity'. Again, as part of agency, authorship and social collaboration, most teams suggested a feature that would divert funds to favorite charities if the player won. Many envisioned a sort of 'charity dashboard' where percentages of winnings could be proportioned to different causes.

Conclusion

There is a rich history of visual metaphor in games of chance. Whether simple forms of pictographs and pictorial modernism, or ribald 16th century French playing cards, lotteries and other wager based games of chance have enjoyed that rare combination of something pleasing to look at and chance to win a dream. The industry is in a time of great challenge and transformation as one generation of players passes the lottery ticket on to the next. But the next generation of players is not guaranteed to walk into the corner store and play. That corner store is gone and a new gaming ecosystem is emerging. The gaming industry needs to continue research and prototyping to create the winning combination of visual metaphor and game architecture for digital natives.

About the Author

Stephen Andrade, associate professor at Johnson & Wales University (JWU) has been active in the technology field for over 35 years. He has been affiliated with JWU for 16 years and has implemented several enrollment-leading degree programs in the field of computer graphics. He has collaborated on issues of technology with various university departments and a number of highly regarded innovative "digital" organizations. He has spent the past 4 years cultivating a special relationship with GTECH – the world's leader in wager-based gaming and lottery systems. His work includes ongoing research into visual metaphor and games of chance for the digital generation. His research is brought into the classroom and experiential education, providing JWU students, faculty and staff with unique 'trusted partner' status at GTECH.

Prior to joining JWU, Andrade was a technology researcher at Brown University with IRIS – the Institute for Research in Information and Scholarship, and the Annenberg Institute for School Reform. He has consulted with the U.S. Department of Defense, the Department of Commerce and the White House on issues of technology innovation and reform.

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