

The Diverse Worlds of Computer Games: A Content Analysis of Spaces, Populations, Styles and Narratives

Jeffrey E. Brand

Associate Professor
Centre for New Media
Research
Bond University
Gold Coast, Qld 4229
+61 7 5595 2511

jbrand@staff.bond.edu.au
www.diverseworlds.bond.edu.au

Scott Knight

Assistant Professor
Centre for Screen Media
Bond University
Gold Coast, Qld 4229
+61 7 5595 2544

sknight@staff.bond.edu.au

Jakub Majewski

qmajewski@yahoo.co.uk

ABSTRACT

The Diverse Worlds Project analysed 130 computer and video games (CVGs) to understand their textual landscape. Titles were sampled from the five gaming platforms dominant in 2002. Blending the quantitative content analytic tradition and the Bordwellian approach to formal film analysis, characters, settings, narrative and stylistic factors were studied in four units of analysis including box, handbook, opening cinematic sequences, and game-play.

“Diverse Worlds” contradicts the popular stereotypes about CVGs presenting exaggerated, violent characters in simplistic, formulaic, worlds lacking in aesthetic nuance and texture. Games are painted using a vast array of visible features and locations. Narrative structure and progression varies depending on genre and goes beyond “shoot the bad guy.” Graphic stylisation tends toward a mid-point between animation and photo-realism with the latter more often used for rendering environments and the former for characters. Limitations of character representation include the use of stereotypes found in traditional mainstream media. An earlier version of this work was presented at the International Ratings Conference in Sydney, Australia, September 2003.

Keywords

Content analysis, film analysis, representation, narrative, style

INTRODUCTION

In her panoptic introduction to MIT's elaborate *New Media Reader* published earlier this year [28] Janet Murray wrote,

New media in any age are always distrusted media. Prometheus is a hero to some and a transgressor to others, and both are right. Fire warms and fire burns. It remains to be seen which of the anti-technological voices from the second half of the twentieth century will be of lasting importance.

Steven Poole—author of the prescient book *Trigger Happy*—artfully refers to computer games as “Prometheus Engines.” Their millions of pixels radiate complex messages through computer and television screens around the world [22].

These computer games—or Prometheus engines—are the subject of choleric criticisms by moral reformers and social researchers who become increasingly vocal as the fire turns blue and therefore hotter with more adult themes and dark alley ways. Their claims of harm are carried with glee by popular current affairs media whose job it is to dichotomise, reduce, entertain and sell absorbing stories. This popular discourse, however, has done little to elaborate the nature of computer games, let alone the role of the medium in contemporary culture. Rather, as Stanley Cohen in his book on moral panics [9] and Barry Glassner in his book on American fear culture [13] would both contend, a climate of panic and fear surrounds the increasingly popular medium of the computer game.

Computer games are, more than any other medium, invoking notions of media convergence. Undoubtedly this is another reason why computer games are objects of considerable attention at this gathering. The relentless pursuit of realism and verisimilitude in real-time computer game graphics, sound, and feedback, the incorporation of cinematic sequences, the inclusion of printed materials and the insertion of popular music all conspire to make games a new “super-medium.” Indeed games are the new value-added product for older media with their integration in products like DVDs and their inclusion with books and magazines. All of this makes computer games classification challenging for both researchers and policy-makers.

The computer games industry is the star of the entertainment sector. It has achieved repeated double-digit annual growth rates [4, 5]. So robust is the medium that in the midst of the recent economic downturn, the BBC labeled the games industry “recession-proof” [1].

Although computer games are expensive to make [2], with the average game costing \$5 million to produce [21], success of individual games catapult modest businesses into the “big league.” *Grand Theft Auto III* for the Sony PlayStation 2, “sold 7 million copies, and grossed over \$350 million” [12], propelling its producer DMA Design, into uncharted territory [3].

Computer games are popular with a growing and ageing world-wide audience. Nottingham Trent University researchers have just completed a three year study of 11,000 on-line gamers logging on to two gaming web sites. Their research supported by the British Academy confirmed American games industry claims for games in general. The majority of gamers (60%) are over the age of 19 years and many are middle-age; one in six is female. One-third earns an annual income of between \$50 thousand and \$100 thousand; nearly half have university degrees, many are doctors, lawyers, and financial service sector

workers among other professions. Finally, it appears gamers are less than social misfits; apparently gamers are more extroverted than introverted, preferring to play in groups known affectionately as “clans.” [15, 16].

Despite their growing popularity and economic gravity computer games are increasingly derided by media tarts and skeptics like David Grossman, fierce co-author of the widely publicized 1999 book, *Stop Teaching our Kids to Kill* [17].

It is neither new nor surprising that a young medium becomes the object of bipolar interests. Preeminent social scientist Everett Rogers explained in his 1986 book, *Communication Technology*, that individuals tend to hold one of two competing positions with respect to new media [23]. The first he called the **“uncritical euphoric stance”** leading to eager consumption of new media products; a position that is quite naturally supported by commercial interests (including, perversely, the current affairs media). The second position Rogers called the **“hypercritical pessimistic stance”** leading to public outcries of impending disaster as a result of a medium—but offering few alternatives and certainly not partaking in consumption of the form. My bet is that we have a few of both types here today.

Regrettably, the discourse on computer games carried in popular current affairs media adopts the uncritical/hypercritical dichotomy instead of something more intelligent. More reprehensible, however, is the pandering to this formula by the high-brow news media and particularly the academic press. It is particularly dysfunctional because the debate surrounding computer games plays a role in policy. Many researchers discuss the social significance of games and converging media while they adhere to the conflict paradigm of “good or bad” and reflect our growing body of knowledge (cf., [6, 11]).

Whilst popular pro-games media tend to focus on game reviews that examine the content and playing styles of games, it is remarkable that little formal, academic research on computer game **content** exists. The academy knows far too little about this cultural form.

Only six studies have explored Computer games using content analytic techniques [7, 8, 10, 18, 20, 27]. Each of these studies has focused narrowly on the presence and scope of violence and the presence and roles of (mainly) female characters and only one study goes further to explore race portrayals in the American context. Each of these studies has explored game play content only excluding other game elements, and each of these studies observed a small sample of game titles. A more thorough review of this literature than we can provide here is available at the project web site.

UK media addiction researcher Mark Griffiths concluded a study six years ago on computer game playing and addiction with a call for **“an expansion of the taxonomy of computer games, as it is probably the case that the different types of computer games...have different consequences--both positive and negative,”** [14].

University of Michigan researcher Dmitri Williams’ wrote last year in *The International Journal on Media Management*:

With the exception of a growing body of social science research chronicling the effects of game violence, academia has largely ignored this booming and vital new mass medium. And yet even this effects work is mostly uninformed with regards to content – video games are

assumed violent to some degree without an understanding of the different types of content, or an agreed-upon typology for genre or playing style. The generalizability of the results is often misinterpreted to mean that the majority of gamers are playing first-person shooters.... One would scarcely imagine a study on the effects of television without a better understanding of what kinds of television there are or how popular each type is among which groups. Indeed, a basic typology of content and the development of content scales should be a research priority [29].

Similarly, Purdue University researcher, John Sherry, wrote in relation to his meta-analytic research published in *Human Communication Research* [24], that to resolve some of the discrepancies in research on the effects of computer games on aggressive behavior, a promising area of research is “examinations of content” and “game attributes [such as] action, graphicness, difficulty, [and] human qualities” [25].

In addition to the academic dividends that might flow from the typology requested by Williams, the taxonomy sought by Griffiths and the examinations of content proposed by Sherry, content research offers considerable promise for policy.

Discussing the role of content studies in television violence research Guido Stempel wrote in 1989:

The controversy over television violence may be interesting, but such controversies are seldom resolved. The impressions of those on both sides are coloured by their perspectives. The critic watches a television program and sees nothing but violence. The television producer watches the same program and sees violence that is only incidental to the plot. Such situations make the need for formal content analysis rather evident. [However]... communication research has not dealt equally with [content], [26].

Content research establishes a knowledge base from which to develop **informed** effects research and fits naturally with classification policy initiative.

We agree with Griffiths, Williams, Sherry and Stempel. We believe that understanding the content characteristics of computer games is critical for understanding other aspects about them, including their impact.

Therefore we developed and implemented the *Diverse Worlds Project* in order to demystify computer game content and to improve popular, policy and scholarly communication about them. The Diverse Worlds Project is an independent, systematic, multi-method, multi-dimensional study of computer game content.

We sought to develop a detailed system for observing content in this medium that goes beyond the violence and sex and race roles agenda typically associated with media content studies—not because we believe these are unimportant but because we think they are myopic and inadequate. We sought to establish baseline knowledge on the range of story locations and objects, story characters, narratives and stylistic features in computer games.

We also sought to infuse our content analysis with observations based on ideas normally confined to (qualitative) formalist film studies to determine whether they reveal content in fresh ways. Ultimately, the Diverse Worlds

Project is a bridge between the uncritical euphorics and the hypercritical pessimists.

METHODS OF THE DIVERSE WORLDS PROJECT

The centre-piece of DWP is a content analysis of 130 of the top-selling games in the first half of 2002 in Australia (arguably a nexus of European, American and Japanese market tastes). We examined games from all five contemporary platforms including the PlayStation2, Xbox, Game Cube, Game Boy Advance and personal computer with each representing about one-fifth of the sample based on the view that a comprehensive study of this nature should represent each platform and offer the prospect of comparing platforms on key measures.

We identified four units of analysis including the slick (the cover or box), the manual (or handbook), the introductory cinematic sequence and the first ten minutes of game-play. Our view was that a player's experience with the game is determined by exposure to each of these elements, that each element familiarises the audience with the game world and with the extent and nature of the game play and narrative.

We catalogued four representational elements of game content including the physical and object-oriented world, leading characters, style and narrative. These are among six components that create the game experience.

The physical and object-oriented world is the setting of the game, the characters transmit the action, the style is the technical and structural shell in which the game is presented, and the narrative is the lesson, story and intangible experience. The two components that we omitted were game mechanics and levels, sometimes called level design. Game mechanics are those rules which the player is bound to in order to play within the game, including the different requirements for single- and multi-player games. Levels are those distinct sub-games, or chapters if you like, that offer extensions of past game elements but either offer new themes or higher-order challenges.

Nevertheless, our ambition led us to measure 400 elements of each game. We believe an important innovation in the Diverse Worlds Project is the importation of ideas about what to measure when looking at style and narrative from the formalist research tradition associated with film studies.

Our research team included four members: two postgraduate students in film and television, Scott and me. We worked together to establish the coding scheme and operational definitions leading to a pilot-test of the instrument on eight games in August and September 2002. The four of us analyzed the games in the sample frame between October and November.

Coding progressed through stages to ensure parallel coding from one coder to the next coder. The first four titles were coded conjointly by the entire group of four coders. The next four were coded by pairs of coders followed by an additional four coded by changing the coding pairs. Finally, the remaining 118 titles were coded by individual coders with one of those coded by all four coders at the midpoint of the coding process to check for coding consistency.

FINDINGS

The findings are necessarily selective. More findings are available on the study web site and different aspects of the results are under review publication review.

The analyses are really quite simple, yet powerful. We begin with four general findings and work from the easiest to the most difficult to communicate (reversed in their order presented in the title). We will then explore each in turn with more detail. To communicate clearly and simply, we have combined the findings for cinematic sequences and game-play unless we indicate otherwise.

1. Representation of places and objects contradicts popular assumptions about computer games presenting exaggerated, violent settings in simplistic, formulaic, worlds lacking in aesthetic nuance and texture. Games are set with a vast array of visible features and locations.
2. In game-play, characters are presented using stereotypes found in traditional mainstream media. However character behaviors are remarkably varied—just like human behaviours in the real world, and contrary to popular assumptions few characters are presented with exaggerated features.
3. Graphic stylisation tends toward a mid-point between animation and photo-realism with the latter more often used for rendering environments and the former for characters. Colour, lighting, and perspectives varied considerably.
4. Narrative structure—the way a story unfolds—varies depending on genre and goes beyond the stereotypical “shoot the bad guy.”

Physical World

Historically, one of the overarching aesthetic choices in location in games was that of the abstract maze. Use of the abstract maze was as much a function of technical limitations as of earlier expectations for the medium. In our study, the maze was replaced by discernibly real rather than abstract places.

Table 1: Game world settings.

Enclosure	%	Location	%
Outside	75	City	25
Inside	49	Forest	20
Environmental	%	Mountain	18
Clouds	52	Road	16
Sun	50	Stadium	13
Fire	34	Fantastic	11
Fog	11	...	
Rain	9	Space Ship	7

We were struck with the multiplicity of environments in which games are set and of the features presented in them. Instead of judging which feature was most common by inspection, we counted everything with categories being noted as they applied. Three-fourths of all games feature exterior settings; half of all games feature interior settings.

The weather in games is often inclement, creating rather...atmospheric settings for dramatic effect. Over half of outside game settings feature clouds in the sky which is also painted with sunshine and stars, fog, rain and lightning in 10% of cases each, snow in seven percent and so on. Whilst *Space War* was the first computer game, its setting, the vacuum of space is common in only eight percent of games. Cities and stadia combined (38%) share the spotlight with forests and mountains (38%), roads (16%) linking the two locations and where the roads don't go, fantastic artificial worlds enter the picture whilst space-ships aren't as common as some would claim.

Table 2: Game world objects.

Visible Features	%	Equipment/Tool	%
Buildings	64	Vehicle	41
Lights	61	Weapon	36
Trees	59	Sports	17
Water	42	Magic	9
Signs	40	Computer	8
Roads	39	Gardener's/Mechanic's	7
Animals	28	Key	5
...		...	
Food	14	Musical Instrument	1

The digital canvas is painted with a wide range of physical features and tools that are more than just window dressing; indeed prominent features like buildings and trees, and animals are common in a large proportion of games. Equipment in games includes vehicles and as critics often isolate...weapons. But sports, magic, computer, garden implements are all there. But the iconographic key, once ubiquitous in and a signifier for progression and level-jumping in strategy and platform games, now has a bit part to play. Having said all this, we took from this slide the basis for opportunity in game design to take other objects and make them a part of the game world...an example is toys (like model trains and kites) for kids of all ages.

Table 3: Game world population.

Population density	%	At least one of...	%
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Uninhabited	7	Primary Characters	94
Sparsely Populated	61	Secondary Characters	43
Heavily Populated	32	Active Background	56
	100	Non-active Background	20

The diverse worlds of computer games contain not only inanimate objects, they naturally include people and beings through which the action and experience takes shape. We considered the presentation of characters separately from physical spaces and objects except for our determination about the relative population levels of game worlds...a sort of digital census of game worlds.

Subjectively, we concluded that for most games (60%), the population density was sparse. Yet this finding is contradicted by more objective evaluations of population representation. For example, most games feature one primary character in the frame who is almost half of the time associated with at least one secondary character; moreover, in over half of the games, more than 20 active background characters share the game space. Almost 20% of games have non-active background characters and this particular population category is found almost exclusively in games based on spectator sports.

In addition to these relatively objective measures, we ventured into more subjective judgments that included cataloguing the appearance of danger to the character or player-as-character in the game slick, handbook, opening cinematic sequence and game-play (albeit the first ten minutes). Although we expected the slick, in particular, to present gamers with excitement and extreme elements of risk to compel their attention, compared with the internal workings of the game-play, we found a remarkable continuity in the presentation of danger across the elements of the game package. We found that the most extreme conditions (either bucolic or apocalyptic) were quite rare and in equal measure with one another (less than 5%) compared with more moderate safety/danger conditions (each about 45%).

Characters

We randomly sampled two leading characters for each game. Given that the opening cinematic sequence and the game-play often portrayed multiple characters, we chose to examine character representations exclusively within game-play. In the end we analysed 123 first leading characters and 45 second leading characters for a total of 168. For simplicity, we have combined results for first and second leading characters.

Table 4: Character roles.

Visibility	%	Group Relations	%
3rd Person	66	Independent	66
1st Person	16	Small Group	16
Form	%	Platonic Pair	13

Human	72	Story Role	%
Animal	9	Hero-Victim	76
Speaking	%	Villain	8
None	58	Helper	5
Infrequent	31		
Frequent	10		

We found characters are predominantly depicted as objectively visible—that is full body, third person view (66%)—humans in the role of the independent (66%), non-speaking hero. Given that speech is one of the defining characteristics of human society, we were surprised if not disappointed to find that only 41% of the lead characters spoke and only 10% spoke frequently. However, qualitatively many active background characters were presented with speaking functions and non-active background characters were occasionally heard, something we didn't formally observe; compare this with film in which background characters generally are less vocal than lead characters. An immediate caution, though, is that just as a substantial proportion of the narrative is carried by cinematic sequences in games, so too might more speech be carried in the interstitial cinematic sequences, which we didn't measure.

In any given narrative, a character is restricted to a limited range of story roles. Invariably, the main character will exhibit the role of hero. Our findings demonstrate this with 76% of characters cast in the role of hero-victim.

Stereotypical representation of characters in traditional mainstream media has found its way into game worlds. The next slide speaks in many ways to the lack of diversity in people within computer games and areas of opportunity for industry in creating games and audiences in selecting them. The vast majority (71%) of lead characters were male with 13% female and 16% unclear. Most (63%) were adult, most were either of white European background or so vague as to be unclear.

We noted the remarkable frequency with which it was difficult or impossible to divine the actual demographic characteristic of lead characters. We concluded that this is one of many important dimensions which speak to the difference between the interactive functions of game-play and the more (behaviorally) passive experiences of film and television. Ambiguous characters allow the player to take liberties with their imagination about who is in the car, behind the suit or inside the plane thus making the experience more personal. Further, quite a few of the sports games, fighting games and notably *The Sims* franchise allow the player a choice of pre-defined characters or the option to create a character presumably to choose a surrogate self.

In contrast to the view that male and female characters are portrayed as overtly sexual and in exaggerated form, we found that most (64%) characters are presented with “realistic” body types, “average” height (54%) and weight (71%) and are fully clothed (61%). Only 3 characters had no clothes and these were anthropomorphised animals. Nearly half of the clothes worn by characters were street and sports clothes (45%) with the military, police or spy agent's

uniform the third most common type of clothing. Ten percent of characters had unrealistic, hyper-masculine or sexualised bodies: of these one fifth were female, the rest ... male. For example, from the Game Cube title the *Lost Kingdom*, comes Katia, "the heir to the crown of Alanjeh," who looked every bit the descendent of many female anime with her childish face, large eyes and very long adult legs; among the males and from the PlayStation2 was *Tekken Tag Tournament's* Ganryu, "the out-of-control great gingko" with his bulging muscles and gargantuan frame.

And what are they up to with their "normal" looks and street or sports clothes? They're standing (45%), walking (42%), running (41%), fighting (41%), jumping (32%), driving (20%) and so on. A few, for example *Sims* characters can be caught sleeping.

In addition to these variables related to characters, we examined elements such as work roles and tools used. For information about these findings, please see the study web site.

Style

Style factors relate to the techniques employed by the game designers to render their respective game worlds and the most general of stylistic factors relates to the overall level of realism of environment and character.

In both the opening cinematic sequences and game-play combined, the tendency toward photo-realistic expression is higher for the rendering of environments than for characters with 62% of environments at or above the midline on a five-point scale. Character modeling is more difficult to animate than environments with the current generation of hardware and this is reflected in our finding that 43% of characters are at or above the realism midline on our scale. Our definition of photo-realism was moving photographic images (i.e. real-time video), and this type of representation occurred only in cinematic sequences. However we found a wide variety of representational styles employed in our sample challenging the generally accepted criticism that games rely on cell-shaded rendering.

The aspect ratio (the ratio of frame height to width) remained at standard full screen Academy ratio of 1.33:1 for game-play. However it shifted to other ratios approximating the wide-screen cinema frames of 1.85 and 2.35 for cinematic sequences allowing for greater horizontal composition.

"Camera" refers to the position of a fictional camera and the subsequent framing of the action. Obviously, a vast majority (91%) of cinematic sequences employ what we coded as 'cinematic' camera, meaning the replication of traditional filmic camera set-ups using the standard editing system to shoot the action. The various camera positions and techniques in game-play however were spread across all categories and generally bound to genre. That is, FPS titles employed first-person camera (19% of all games), platformers were presented in side-on and scrolling, and action games used the third-person variation. Of note was the existence of multiple camera perspectives with a significant percentage of titles exhibiting dynamic (23%) and user/defined camera (22%).

A mixture of presentation was also highly evident in the range of games' tonality of lighting. In addition to the traditional computer game high contrast lighting aesthetic (74%), allowing objects to be sharply rendered and easily

seen by the player, we observed significant evidence of low contrast lighting (35%) and warm and cold tones.

Far and away the Hollywood Illusionist convention of motivated lighting as a source predominated in both cinematic and game-play (88%). It appears that game designers want to avoid drawing attention to the artificiality of the lighting scheme and pulling gamers out of their complex constructed game worlds: 91 percent use natural colour.

A majority of the cinematic sequences employ the continuity system of 'invisible' editing. The remainder use the 'montage sequence' type, that is a brief series of shots cut together summarising a topic or compressing a passage of time into symbolic or typical images. We would expect the use of the traditional system in nearly all cinematic sequences. However GBA titles tended not to employ cinematic sequences of a filmic nature. When game-play didn't progress in real-time and scenes were not cut, the game employed the traditional continuity system.

In addition to these visual stylistic factors, we also studied sound, text, and icons. Information about these can be found on the study web site.

Narrative

Now let's turn to dramatic elements of the computer game: the narrative. And yes, games do tell stories. As in books, ballet and film, the narrative in computer games is dependent on genre.

More than one-third (38%) of games we studied had an open-ended narrative structure. Game-play and story in open-ended game narratives allow players to progress and conclude their play on their own terms without a pre-determined outcome. The degree of influence players have over the progression of story in game worlds and the degree to which they are active agents tell us something about the nature of interactivity in games. When we cross-tabulated player causal influence with genre to determine whether genres interacted with each level of player causal influence, the result was startling (Chi-square = 68.4, df = 18, $p < .001$): games in which the player is "on rails", that is in which the player has little control of the narrative progression (42% of games) tend to be platformers, FPS and action; games in which the player is in control of the progression and story outcome tend to be strategy and adventure and sport, driving and racing games (44% of games). Role-playing, Sims and other genres are in the middle (14%).

This finding is interesting because it may present an important opportunity for effects research. Those games in which interactivity allows for story development and change may work differently on the cognitive and behavioral responses of game players. If our assumption is that interactivity amplifies the harmful effects of computer games, then we should compare the effects on audiences of different games with different levels of player causal influence. Experimental research indicates that human violence in games produces the sort of effects found in studies of violent television whereas fantasy and sports violence in games produces smaller effects than those found with television. FPS and action games have the most frequently feature human violence whereas strategy and adventure games regularly feature fantasy violence. We wonder whether it is coincidental that human violence in games is associated with medium-to-low levels of player causal influence in much the same way that film and television allow no influence from the audience on the story outcome. The difficulty with our question is that it doesn't account for platformers.

Table 5: Use of time in narrative.

Temporal Setting	%	Manipulation of Time	%
Past	19	Sped Up/Slowed Down	15
Present	64	Flashback	6
Future	12	Repeat	4
Different Universe	6	Flash-forward	2

Most computer games (64%) are "situated" in the present, despite the stereotype that games are about other times, especially future times or other fantastic universes. Our findings on the way time is manipulated in game stories are analogous to those found for the mainstream film. Manipulating time in stories is not as common (15% of games) as allowing the story to progress along an

ostensibly linear path using a fixed pace. When time is manipulated, it is sped up or slowed down (15% of games) to progress the story or allow it to sink in. Flashbacks (6%), repeats (4%) and flash-forwards (2%) are rare.

Good versus evil is a recurring theme in folklore, fairytales, mythology, contemporary drama and ... computer games (28%). Winning battles (20%) and races (11%) is also common. However, games differentiate themselves from other mass media by their use of point accumulation (23%). The reason that winning battles or overcoming evil appear less common in games than in other story-telling media is that the pseudo-narrative (generally sports games) don't require overcoming evil as the strategic objective in much the same way as sports television, although sometimes constructed as such, is not about overcoming evil. Solving puzzles is common in 8% of games with the rest focused on simulations, empire-building and the like.

Convergent media indeed! The Diverse Worlds Project's attention to narrative demonstrates that there are important reasons to consider computer games as a form of both doing and witnessing. Computer games are the standard-bearer of media convergence.

In addition to these narrative factors, we also explored factors such as the relationship between character and audience or player. To learn more about these findings, please see the study web site.

CONCLUSION

Computer games, like all entertainment media, use conventions of style and genre, conventions of character representation, conventions of settings and environment, and conventions of story telling to deliver their messages. Also like all entertainment media, they offer a degree of diversity for the stories they tell and the experiences they offer. These stories and experiences range from extreme sports to team sports, from World War II history to flying airplanes, from other worlds to the suburban home. They are complex and we suspect increasingly so.

Computer games present their diverse audiences with diverse worlds of digital play. German philosopher Johan Huizinga wrote in 1939 that culture is determined by play [19]. He noted that without play, there would be no great cultures, no great civilisations, no ... humanity. He argued that rather than calling ourselves Homo sapiens (man the thinker), we should call ourselves Homo ludens (man the player).

In 2003, computer games represent our current "state of play." That is, computer games set the rules by which so many of us play. Presumably, by extension of Huizinga's argument, computer games are culture-makers. Indeed, if games underpin so much of our play and emergent culture, knowing the nature of their world seems of self evident importance.

Yet despite the remarkable and increasing volume of popular and high-brow press coverage of computer games, not one published study documents the wider nature of computer games. The fundamental roles we have envisioned for the Diverse Worlds Project include:

- Filling the research gap on games content,
- Bridging the gap between those who criticise games as uniformly bad and those who defend games as only good to improve popular discussion about games, and

- Stimulate further research on computer games by better informing both cultural and effects research about the medium whilst linking the cultural and effects paradigms in a small way.

In coming months, we plan to run Diverse Worlds II by focusing on game-play, genre and player causal influence while partially replicating Diverse Worlds I.

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