

Killing Time? A Canadian Meditation on Video Game Culture

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The Coming Out of Interactive Entertainment

As industry legend has it, the first video game 'Space Wars' took a multi-million dollar, room size computer in the basement of M.I.T (Massachusetts Institute of Technology) to play. By applying the same cybernetic principles of 'feedback' -- originally associated with automation and office technology -- to children's entertainment, Steve Russell created an entirely new medium out of the TV screen. Because it demonstrated the novel possibility of using computers for fun, this innovation in computer programming has had a profound impact on contemporary children's culture around the world (Herz, 1997). Three decades after its invention, the video game industry it founded has become the fastest growing and most profitable children's entertainment business which earned an estimated \$18 billion in 1998 for the corporations that manufacture, design and sell domestic PC's, console game systems, internet play sites, and gaming arcades. Given the scope of this industry, video gaming has also periodically been subjected to critical examination for its growing impact on children and youth.

It is important to realize that from the 1970's on, this industries' astounding growth arises from successive waves of innovation in technology and programming design. Home consoles like a *Nintendo 64* (sold in 1996 for under \$200 in Canada) pack more than 10 times the processing capacity of the original *Pentium PC's*. Industry sources claimed that by 1998, video games had already been incorporated into the daily routines of 65% of all US households, and 85% of those with male children. The recently release *Sega Dreamcast* is the first of a new generation of even more powerful processors which when augmented by recent advances in 3D graphics chips, DVD storage devices and fast modems means that future kids will be playing *Doom*, *Mortal Kombat*, and *Final*

Fantasy on extremely advanced consoles with computational speeds and graphics display chips exceeding those of most engineering workstations. This is why, in his book Being Digital (1995), Nicholas Negroponte of the MIT media lab claimed that video games are the clearest indication how computers will be transforming the specter of human communication.

We are not waiting on any invention. It is here. It is now. It is almost genetic in its nature, in that each generation will become more digital than the proceeding one. The control bits of that digital future are more than ever before in the hands of the young. Nothing could make me happier.
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Douglas Rushkoff in his book Playing the Future similarly writes optimistically about the effects of this new wave of interactive entertainment on youth: "While their parents may condemn Nintendo as mindless and masterbatory, kids who have mastered video gaming early on stand a better chance of exploiting the real but mediated inter-activity that will make itself available to them by the time they hit techno-puberty in their teens" (1996: 31). He quotes Timothy Leary to support his optimism about interactivity:

The importance of the Nintendo phenomenon is about equal to that of the Gutenberg Printing press. Here you had a new generation of kids who grew up knowing that they could change what's on the screen. (30)

To techno-enthusiasts like Rushkoff and Negroponte, video gaming is a perfect preparation for the high tech cybernetic future that awaits the 'screenager': "The games he plays are simulated drives through the very real data networks he will access later on with his computer and modem". "Thanks to video games, kids have a fundamentally different appreciation of the television image than their parents... Rather than simply receiving media they are changing images on the screen" (Rushkoff, 1996:182). "Screenagers" will attain a "greater sense of agency and control in their ever changing lives", Rushkoff assures us, because they are learning to live with a changing digital environment. Or as Herz writes in her book Joystick Nation:

Video games are perfect training for life in fin de siecle America, where daily existence demands the ability to parse sixteen kinds of information being fired at you simultaneously ... kids weaned on videogames are not

attention-deficient, morally stunted, illiterate little zombies who massacre people en masse after playing too much Mortal Kombat. They're simply acclimated to a world that increasingly resembles some kind of arcade experience" (1997: 2-3).

Enthusiasm for digital technology has thus been forged into a promotional strategy for technologizing children's socialization in an 'information age'. Digital megacorps promise a pedagogical revolution of 'interactive multimedia' proportionate their own stake in the 'digital economy:

multimedia has the potential to revolutionize certain aspects of how educators manage education... TV in its time was going to do the same thing. They didn't because they couldn't. Unlike these earlier technologies, multimedia is interactive. It has the ability therefore to replicate some teacher/learner interaction. It also has the ability to link the student with tutors, his or her peers in other places, and with remote sources of information" (Telstra, 1994).

To today's youths, *Commander Keen* and *Crash Bandicoot* are as familiar as *Mickey Mouse* and *Ninja Turtles* were in previous generations reflecting the current corporate repositioning around the digital channels of communication distribution. The \$100 million launch of the *SEGA Dreamcast* in North America in 1999 reminds us that the video game industry is becoming the most active and dynamic merchandisers of entertainment products to the young with promotional budgets exceeding those of the toy or movie industries. Digital entertainment has already won 30% of the US playthings market, earning \$8.8 billion in the US (1998)—winning an increasing share of entertainment spending -- larger than the Hollywood box-office gross (\$5.2 billion) and ten times the amount spent on the production of children's television (Haynes and Dinsey, 1995).

Digitalization has extended the capacities of the global media industries by adding interactivity to television. And with the increasing push of global marketing campaigns video game culture has been developing a similar loyal following around the world. Mostly young and male --who prefer interacting with avatars in cyberspace to 'vegging-out' in front of the television, hanging around with friends or playing street sports. Recent studies of

children's media use have documented that a global gamer culture focused on digital adventure is taking shape around interactive entertainment technologies. (Livingstone, 1999). Indeed, just as contemporary parents were becoming accustomed to their kids spending close to three hours a day with television -- much of it violent -- the video game came along and began changing the contours of children's leisure. While technophiles like Negroponte celebrate this new digital youth culture as empowering parents, teachers, and researchers remain concerned about what the growth of interactive entertainment media means for their kids. The comparisons of video games with television are obvious, because the interactive entertainment industry emerged at the point of convergence of the twentieth century's two most important communication technologies—the computer and television. Moreover, as Provenzo notes, this hybrid technology is a new medium, which fuses TV's *spectatorship* with cybernetic *play control*. This is why Eugene Provenzo (1991) noted in his examination of this industry, the real significance of video game technology for contemporary childhood is that:

It represents the first stages in the creation of a new type of television—an interactive medium as different from traditional televisions as television is from radio. The remaining years of this decade will see the emergence and definition of this new media form in much the same way the late 1940's and early 1950's saw television emerge as a powerful social and cultural force. (105)

The video game industry is a hybrid because it not only cultivates new uses of interactive technology, but is also a unique “entertainment experience”. This experience has already changed how many kids allocate and spend their leisure time. And children's attachment to this hybrid media is confusing -- at least to parents -- because although the computer chips makes technology more ‘dynamic’ and ‘engaging’, the contents and themes of these games and entertainments appear to be extensions of escapist TV fare at its worst. A quick look at *Messiah*, *Resident Evil II* or *Splatterhouse*, will leave anyone wondering whether we really have transcended the age of television in this new digital playground when so much of the contents promote testosterone fantasy and grotesquely cartooned violence. Noting that “the largest single target audience will no doubt be children”, Provenzo worries that video game industry is simply extending the troubled TV culture

of the past: "If the video game industry is going to provide the foundation for the development of interactive television, then concerned parents and educators have cause for considerable alarm. During the past decade, the video game industry has developed games whose social content has been overwhelmingly violent, sexist, and even racist". There can be no doubt that this 'hybrid' technology is poised to change the way children play and learn. Yet media analysts are only beginning to understand the implications of "interactivity" for how children use and respond to the screen. Technophobes like Neil Postman have already warned that the emergence of interactive or computerized communication technologies possesses a serious threat to children's culture: "A new technology does not add or subtract something. It changes everything" (1993: 18). He goes on to state his opposition to interactive media which like television he sees "breaking a four-hundred year old truce between gregariousness and openness fostered by orality and the introspection and isolation fostered by the printed word". He goes on to say: "Stated in the most dramatic terms, the accusation can be made that the uncontrolled growth of technology destroys the vital sources of our humanity. It creates a culture without a moral foundation. It undermines certain mental processes and social relations that make human life worth living" (1993: xiii). His opposition it turns out is based less on his concerns about interactivity than about the way it will be used: "surrounding every technology are institutions whose organization - not to mention their reason for being - reflects the world view promoted by the technology. Therefore when a technology is assaulted by a new one, institutions are threatened. When institutions are threatened, a culture finds itself in crisis." Postman believes that our literate culture is in crisis because we have left this powerful new medium in the hands of the entertainment industry that has failed to develop new media in a way that is beneficial and helpful to children. Whether we agree with the technological optimists or pessimists about the consequences of digitalization, as media researchers it is clearly time we realized that our children's popular entertainment is becoming increasingly confusing to us. As cultural critic, Allucquère Rosanne Stone (1995) recently observed, "there seems no question that a significant proportion of young people will spend a significant and increasing proportion of their waking-hours playing computer based games." She goes on to add that, "it is entirely possible that computer-based games will turn out to be the major

unacknowledged source of socialization and education in industrialized countries before the 1990s have run their course” (26-27). Yet despite its ascent as the fastest growing and most profitable entertainment industry, there is remarkably little commentary on the development and acceptance of this new medium, on the range of games and their ratings, let alone studies of their impact on children’s socialization and growth. Stone argues that we have very little understanding of the unique features of virtual presence and interactivity that make video gaming a unique cultural experience comparing our ignorance about this medium “to holding a cocktail party in a house that is already ablaze”.

A House Ablaze?

Stone is right. Compared with television, academic research on the impact of video games on young people amounts to little more than cocktail party chitchat. Reviewing this literature one finds that there are almost as many reviews as there are original studies on this question of video games and aggression in youth. The 'moral panic' concerning the teen arcade culture of the early 1980’s has been quelled by such repeated assurances that computerized play is empowering the digital generation because these technologies provide opportunities for exploring, learning, developing eye-hand coordination and connecting with diverse sources of information (Greenfield et al., 1998). Moreover, much of the supportive research has been undertaken in the context of schools use of educational video games (Greenfield, 1984; Kafai, 1995) with little regard for the growth of arcade and domestic videogame cultures which are arising in young males (Funk and , 1993). There does exist a small and slowly growing body of evidence concerning the potential negative effects of video games and the question of violence and addiction. Subsuming Bandura’s social learning paradigm, most is focused on whether video games are likely to intensify the modeling of violent behaviors:

Furthermore, the interactive nature of video games may increase the learning of game playing behaviors, including aggression, especially considering the move towards real-life action and actors

in the newer generation of video games. This increasing realism might encourage greater identification with characters and more imitation of the behaviors of video game models (Bandura, 1986).

Durkin's (1995) review of these early studies for the Australian Broadcasting Authority acknowledges that like television, violence in interactive entertainment is of concern. There are a few studies which demonstrate the possibility of social learning from video games he acknowledges, but this constitutes very limited evidence concerning the causation of aggressiveness: "evidence does not lend strong support to the suggestion that computer game play promotes aggression in children". Overall he concludes, "although the research is not exhaustive and by no means conclusive, it indicates that the stronger negative claims are not supported. Computer games have not led to the development of a generation of isolated, antisocial, compulsive computer users with strong propensities for aggression. To the contrary, some evidence indicates that there may be cognitive and perceptual-motor skill gains as a result of computer game practice...reviving patterns of family togetherness in leisure" (1995: 71). Durkin notes two reasons why video game play may not result in violent behavior in kids: Firstly, by age 8 most kids understand the 'virtual' nature of video games and therefore the aggressive behaviors enacted in video games are playful and cognitively distinct from real aggressive behaviors in daily conflicts or interactions. One of the key problems in attempts to compare the effects of television violence and that of video game play is the difference between playing and watching: "Identification is a complex process that has been scarcely studied in relationship to computer game play, especially in respect of aggressive content". Secondly, many heavy players report that they enjoy the experience of conflict and competition -- because playing makes them happy and relaxed rather than angry and hostile it is not likely to result in aggression.

In his more recent contribution to this journal Durkin (1998) notes that problems in research methods makes it difficult to draw any conclusions on video games contribution to violent behavior: "there were only a small number of studies and these had yielded weak or inconsistent findings" (111). In this overview of recent Australian research he notes that the limitations in design and measurement of effects are serious. Even more recent studies in Australia he reports reveal [that] "aggressive responses not inevitable

from playing video games” (112) [because] studies often confuse conflict with aggression, and hostile feelings with aggressive behavior (Steve, check this sentence). Durkin notes that laboratory studies of effects are especially inconsistent in their results. Moreover, as in television research generally correlations between judged aggressiveness and time spent playing video games are confounded by interpretations of causal direction. Durkin also notes that most of the original research into the effects utilized earlier gaming technologies whose graphic capacity and game control bear little resemblance to the current and coming generations of young gamers (Durkin, 1998).

Dill and Dill (1998) in their review of the same literature weigh the evidence similarly: “overall the majority of investigations have supported the predicted relationship between violent video game or violent virtual reality play and increases in aggression or aggression related outcomes... two studies show decreased pro-social behavior as a function of violent video game play”. Dill and Dill have noted that only four studies have used 'current generation of video games'¹ and three did show effects on “aggressive behavior, hostility or aggressive thoughts “. So they conclude, “The preponderance of the evidence from the existing literature suggests that exposure to video game violence increases aggressive behavior and other aggression –related phenomenon. However, the paucity of empirical data coupled with a variety of methodological problems and inconsistencies in these data, clearly demonstrate the need for additional research”. Dill and Dill go on to cite the same reservations about this research as Durkin and Low (1998): “Precious few true experiments have been done to assess the effects of playing violent video games on aggression-related outcomes; too much has focused on very young children and used ‘aggressive free play’; the studies of “aggressive affect studies often uses undergraduates.” Moreover there is a failure to deal with the gender differences cogently; to properly theorize the aggression effect or distinguish between hostile feelings, aggressive thoughts and fantasies and behavior. As they conclude “there are a number of methodological problems in this literature, the majority of which were in efforts that found no differences or that failed to support their own hypotheses” (1998: 420).

¹ Current generation recognizing the important changes in the graphic qualities and design of the new 64 bit video game systems.

Dill and Dill also see the need for a more sophisticated theorization of the effects of media – one which might better accommodate the growing diversity and realism of contemporary video games, the sophistication of our understanding of social learning, the gender and other individual differences that lead to susceptibility, and other external factors that mediate the processes of aggressiveness. Dill and Dill note the growing complexity in the theorization of TV violence arguing “A similar relationship should exist because the same conceptual variables are involved. Specifically video game violence effects should operate through elaboration and priming of aggressive thought networks, weakening of inhibitions against antisocial behavior, modeling, reinforcement, decreased empathy for others and the creation of a more violent world view” as well as the possibility of catharsis and arousal effects (1998:409). They go on to note that following Huesman theory that playing violent games may prime in two ways: 1) by either exposing children to aggression which “can trigger related feeling and can bring to mind knowledge of aggression related skills, memories and beliefs “ or 2) which “weakens inhibitions against engaging in aggressive behavior ... changing individual perception of what is normal or acceptable behavior”. Noting the video games generally "reward" violent responses as opposed to other means of solving problems, they argue this may lead children to “chose aggressive responses to conflict situations in their own lives”. Dill and Dill (1998) also note that the increasing realism in the games is of consequence because the similarity of aggressive clues “most particularly the weapons, and moves used in fighting can be translated into real life”. As they state:“the child playing an aggressive video game may learn that hitting or even shooting another person is the appropriate response in a conflict situation and that this type of aggression is likely to be reinforced” (410).

They also note that the active participation of video game play where players choose and then manipulate characters from first person point of view may accentuate the identification with his aggressor: “Identification with the video game character may be stronger than identification with television or movie characters, in part because players choose a character and play the characters role in the video game scenario” (Dill and Dill, 1998: 413). For this reason desensitization effects may be accentuated: “Empathy has been found to be lower among known aggressors than non-aggressive and the degree that

plots justify the aggression “if violent video games depicts victims as deserving attacks and if these video games tend to portray other humans as targets then reduced empathy is likely to be a consequence of violent video game play”. Dill and Dill observe that many of the problems in these studies arise from limited theorization of the differences between video game play and television watching. Three general issues arise from this literature: the difference between watching TV and playing video games; the need for new research that recognizes that video games have dramatically changed; and a need for an expanded theory of how playing aggressive games may have long term effects on children.

Funk et al. (1996) reviewing the same body of literature note the positive health, educational and therapeutic implications of video games stating that “edutainment is one of the most positive applications of electronic games, but one whose impact has yet to be demonstrated through longitudinal research” (117). They go on to say that many are more concerned about violent video games than films because “on a theoretical basis playing violent electronic games may influence behavior through observational learning, practice and reinforcement... the critical dimension of active participation may increase the impact of electronic games relative to time spent”.(Funk, Germann, and Buchman, ??: 120-121). “Surveys have identified various negative correlations between playing electronic games and various target measures such as aggression and self-concept” yet these results are correlational “and do not at this point establish causality. As a whole however laboratory and survey results suggest that game-playing particularly playing violent games, may not be entirely benign for all players” (124). But Funk and Buchman (another article, date?) have also noted there is consistent evidence of gender differences in use and response to video games, as well as in aggressive predisposition which create problems for generalizing the effects of playing violent video games.

As in the TV violence issue the confounding of aggressive predisposition with preferences for aggressive entertainment make it hard to explain both correlations between playing violent video games and real violence or its absence. As Dill and Dill (??) note the correlation between aggressiveness and video game play might have 1) a social learning explanation – video games cause aggression (or its absence indicates catharsis); 2) a disposition explanation – aggressive disposition leads to preference for more violent video game play; or 3) relate to an underlying factor (low self esteem, social

isolation) which leads to both aggressiveness and video game play. So the same problem of interpreting survey studies is endemic in this literature too, because correlations cannot reveal the causal relations between gender, amount of violent play and aggressiveness or hostility that researchers measure. And this is of concern because the 'experience' of those simulated conflict situations seems to be crucial to the mood altering qualities of the play experience that male gamers seek and that young females avoid (Kubey, 1996; Goldstein, 1998). As Jukes and Goldstein (1993) have noted there is strong evidence that boys develop a preference for aggressive toys and games and that this is related to arousal levels and chronic aggressiveness. "Highly aggressive boys find war toys more appealing than other toys - and prefer violent sports films and video games and television programs" (Goldstein, 1999). "Both war and war play may reflect the prevailing values of the cultures in which they flourish, values that stress aggression, assertion and dominance" (Goldstein, 1998: 67). Given the consistent evidence of gender differences in both aggressiveness and play preferences, correlations are theoretically problematic for media effects surveys Goldstein (1999) notes, because it confuses issues of male aggressiveness and male entertainment preferences with those of media effects. Commenting on the evidence of a relationship between aggressive play and war in children Goldstein notes: "The reasoning underlying this research is that exposure to violence activates aggressive associations and images. These in turn heighten the preference for further exposure to violence" (1999: 59).

Goldstein argues that it is crucial to understand why and how young males develop their preferences for violent entertainment generally. Real violence is different from play violence he notes because there is the absence of intent to hurt another. Entertainment violence is consumed for distraction and mood management, to increase excitement and arousal, and to express emotions. Goldstein believes therefore that we must differentiate between violence experienced for its own sake and violence experienced as play and entertaining. "Individuals differ in their need for excitement and tolerance for stimulation. Those with a moderately high need for sensation find portrayals of violence more enjoyable than those with a lesser need". He cites a number of studies that reveal that enjoyment is the male response to violent entertainment, not hostility: "in order to experience anything like pleasure from exposure to violent or threatening images, the

audience must feel relatively safe and secure in their surroundings”. Further more there must be cues that the violent images are produced for purposes of entertainment and consumption”. (1999) In relation to video game violence he believes that interactivity may make video games seem less violent than similar images in film: ‘because video gamers have more control over the images perhaps the effects of violent images are reduced”. (Goldstein, 1998: 60) **The implications of this I believe are that we need to better understand the developmental processes through which simulated aggressiveness is socialized and turned into a form of pleasure for males.**

Mark Griffiths (1999) also recently concludes “the one consistent finding is that the majority of the studies on very young children – as opposed to those in their teens upwards-tend to show that children do become more aggressive after either playing or watching a violent video game” but all the evidence is based on one research method observing children’s free play. In this sense claims about aggression effects are based on observations of energized conflict play. Griffiths is scathing on the design and measurement issues arguing that “all the published studies on video game violence have methodological problems and that they only include possible short-term measures of aggressive consequences”. Differentiating between the modeling and catharsis explanations is especially difficult in correlational studies using self-report measures of hostility he notes, and because subjects vary in their predisposition to aggressiveness. He argues that not all video games are violent or aggressive in the same way. There is confusion in the literature between cartoon like violence and more realistic games (as in TV shows) and also between competitive hostility (sports or racing) and aggressive contest (fighting, shooting). There is therefore “a need for a general taxonomy of video games as it could be the case that particular games have very positive effects while other types are not so positive”. (1999: 210) He goes on to conclude: “the question of whether video games promote aggressiveness cannot be answered at the present because the available literature is relatively sparse and conflicting, and there are many different types of video games which probably have different effects”. He notes “it is evident that video games can have both positive and negative aspects. If care is taken in the design, and if games are put in the right context, they have the potential to be used as training aids in

classrooms and therapeutic settings, and to provide skills in psychomotor coordination in simulations of real life events, for example, training recruits for the armed forces.”

The New Moral Panic

Bathed in a maniacal aggressiveness, filled with a postmodern cynicism and urging a new tribalism of virtual comradery, the contemporary multimedia entertainment industries have once again caught the eye of the popular press precisely because as Griffiths notes precisely because they are effective in training recruits to the armed forces. Unfortunately it was a series of school shootings in Puducah, Jonesboro and Littleton, in the USA, and in Tabart Alberta that once again catapulted the long simmering debates about North America’s media industries contribution to the ‘cultures of violence’ into the public limelight when some avid gamers the fringe of their schools social life, exacted vengeance on their peers with well planned and executed shootings. Perhaps not coincidentally Jonesboro was also the place where Dave Grossman author of On Killing and a leading critic of violent video games had retired. Grossman (1999) was a lieutenant colonel who had devoted his career to figuring out how to train soldiers to kill. Recently he has become a leading US critic of the interactive entertainment industry arguing that “the main concern is that these violent video games are providing military quality training to children.”

Grossman’s arguments are helpful in broadening our understanding of how video games influence kids. As a retired US army officer, Grossman is well positioned to comment on the similarity between the tactics used in the army to train soldiers and they use of violent video games among children today. The US military has long used simulation training for its soldiers because the “repetition and desensitization” of simulated killing effects kill rates (the actual percentage of soldiers that will pull the trigger in real life combat).

Grossman has trained elite fighting soldiers and police officers how to kill by adapting fighting simulations for training purposes. What they found was that by eliminating the blood, gore and emotions of the ‘victims’ on the computer screen, the soldiers begin to treat their training as more of a game. According to Grossman, the soldier’s training is designed to be both practical and psychological. Simulation training enhances familiarity and physical skills with weapons while decreasing the soldiers’ empathy towards their enemies. By firing at the computer simulated images of enemies who die without blood

and gore, the fighting simulation can sharpen the marksmanship of these soldiers at the same time it trains them to see enemies as targets rather than humans. In desensitizing the soldier to the act of killing the trainee becomes more capable of actually pulling the trigger effectively (Discovery Channel). It also shifts researchers' attention to the cognitive and emotional mechanisms by which violence is dis-inhibited.

Like the training of these soldiers Grossman believes that violent video games may have a similar effect on young people who play them a lot because they help break down the psychological barriers that prevent killing: “children don't naturally kill; they learn it from violence in the home and...from violence as entertainment in television, movies and interactive video games.” Like in the army, the repeated shooting at targets in the video games may not only enhance weapons skills, but also desensitize some young people to the horror of killing by turning enemies into targets. Like the soldiers, with constant practice players of violent video games will eventually have extremely low or even no empathy towards victims of violence. The engagement process from video games will decrease the players' empathy and negative reaction towards violent acts. The disturbing blend of participation, engagement, rewards and practice that video games encourage, is a perfect instructional environment. One of the central thrusts of Grossman's argument is that we see the rise of violent video gaming as more of a concern than violence in movies and on television. In other words aggression training is more effective to the degree it is experienced as not really violent – even pleasurable and enjoyable -- which is the case for most gamers.

Video Game Research in Canada

In Canada research on anti-social and aggressive implications of the emerging video game industry is far outweighed by the massive promotional investment justifying the next generation of multimedia and research facilitation their incorporation into schools (CANARIE project). The Canadian government prides itself on wiring children into the digital future and on cooperating with private media corporations to link classrooms through the Internet although evidence of educational benefits and efficiencies from such investment is scarce. So although projects supporting the use of interactive media in schools are plentiful in Canada, there is remarkably little research into the negative

implications of video games. In a recent review of the extant literature Canadian psychiatrist Craig Emes (1997) reviews the thirteen outstanding US studies concluding “aggressive behavior may result for playing video games among younger children”. As he notes, the evidence confirms that like TV, video game research reveals that “A majority of studies showed that children especially young children become more aggressive after either playing or watching violent video games.” Yet as he goes on to point out, like the TV violence literature: “There are contradictory finds and the reliability and validity of the procedures used to measure aggression levels are questionable. Research into the long-term effects of video game playing is lacking.” Given the limited data Emes believes “Video games have some adverse effects” based on the scientific weight of evidence: 1) the physiologic response of playing video games is similar to mild intensity exercise but not aerobic for fitness; 2) issues of seizures in susceptible children; 3) many children do become aggressive after playing but not consistently so. But studies concerning the ‘generalizability of these effects are questionable’. Emes also feels there is no support for arguments concerning psychopathology associated with video game play; or clear causal relationship to academic performance, and some indication that video games may be “also valuable learning tools” and useful for job training and management of mental illness. Like most other reviewers of this very limited literature, Emes calls for more and better research, particularly on the long-term effects of heavy video game play.

Since the arcade craze of the late nineteen seventies, however public concern about what excessive video game play did to children has from time to time piqued the public interest (Brody, 1994). Braun and Giroux (1988) were among the early researchers to explore interactive media naturalistically, observing young peoples play in 18 Montreal Arcades to assess the social issues presented by interactive media. As they note given the growth of the industry “Parents school teachers, school administrators and legislators are confronted with the challenge of making well informed decisions regarding whether, or the extent to which, youngsters will be allowed access to video games, and also regarding control of the video game industry”. They lay out the arguments both for and against video gaming pointing out the proponents argue that video games are “rich in tasks that demand perceptual, motoric and cognitive” skills that imply psychological enrichment

and skilling from playing. They also point out the critics claim potential addictiveness of video games; the preponderance of male players; the potential isolation of this playform; the promotion of competitive values as well as the 'antisocial and aggressive' content'. In an observational "proxemic" study of arcade play they find strong evidence that the most played games 1) are dynamic and intensely engaging 2) that players and themes are disproportionately male; 3) that players are mostly solitary; 4) that games are never cooperative and mostly sequentially competitive and 5) 70% of the game play is with violent and aggressive themes (war 35%, sport 20%, adventure 15%, crime 10%). On observing players in 18 arcades they conclude that video game play is a social occasion or point of congregation for adolescents and "there is reason to believe that skill acquisition and generalization which have been demonstrated to occur on a small scale may underestimate the benefits of video game play" (101). But they also note that their data also warns that "we, the public, should be critical of arcade video games and attempt to exert some control on children's access to these games and on the video game industry". Their study supports the arguments that reinforcement theory has been applied to the letter by video game designers" and that the 'reinforcement parameters of video games "represent the perfect paradigm for induction of 'addictive" behavior; "there does not seem to be a safe arcade video game in this respect, at least not among the most popular ones". They go on to comment that "it seems unfortunate however that microcomputers have not been used more to promote pro-social or cooperative behavior among youth" and might especially encourage more female players". Moreover "the extreme saturation of arcade video games by violent content is to be deplored". They conclude that "more public concern about and awareness of, the video arcade phenomenon might also in turn influence legislators and decision makers in and around the industry to intervene in favor of improving the quality of life of youth, with regards to video arcades" (104).

Gupta and Deverensky (1996) noting the high incidence of gambling among school children argue that video games and gambling activities have similar attractive features and intermittent reinforcement schedules which may lead to a relationship between them. Since gambling has been associated with criminal involvement, delinquency, truancy and poor academic achievement" it was important to understand this relationship. "Like

gambling, video games are reinforcing because they sharpen the contingencies of winning and losing” they argue. Videogames and games of chance share several properties: Both are exciting, contain elements of randomness and operate on schedules of intermittent reinforcement”.

They argue that “if the compulsive behaviors of gamblers and video-game players are the result of similar mechanisms of reinforcement, then one might hypothesize that sophisticated video game players will transfer their relentless effort to exert control in a video game over to a gambling situation”. Pg. 380

There study had 104 children aged 9-14 fill out a questionnaire exploring issues related to video game playing and gambling behavior subsequently observing the youths as they played a computerized blackjack game. Surprisingly, 70% of sample had gambled, 53% gamble at least once a week. Frequent video game players are more likely to see themselves as skillful, go to arcades, and to gamble more-- but males disproportionately so. 55% of female players also gamble once a week compared to 10% of the infrequent video players. Motivations for gambling are also largely the same as gaming as enjoyment 74% excitement and 49% pass time to the list. Males report more excitement than females. Gamblers find video games more exciting than non-gamblers (47% of gamblers vs. 10% of non-gamblers). And frequent players wagered more money in the blackjack game although there was no difference in their gross winnings. Males exhibited greater risk taking tendencies on the blackjack task than females. The findings, in general suggest that frequent video game players gamble more, report that gambling makes them feel more important, and take greater risks on the blackjack gambling task than infrequent players, although no overall differences in success were found. They state that although the relationship between gaming and gambling is significant “it still remains unclear whether experience with video games leads one to gamble, or whether both activities attract the same children due to their shared properties.” They go on to note that it is plausible that the widespread gambling behavior noted in Canadian youth is related to the rise of video game arcades.

Gupta and Devereensky base their conclusions on the similarities between the reward structures of video gaming and gambling: “sporadic reinforcement schedules, excitement while playing, and an atmosphere of risk are important aspects of video gaming as they

are of gambling and other addictions”. They also note that although the majority of the youths see video games as more skill driven than luck driven many (especially gamers) also see gambling as requiring skill (56%). Playing video games involves a progression through induction of rules and skilling of coordination such that “child establishes a sense of mastery as randomness turns into order”. “ (380) “games lead to continually and sometimes compulsively attempt to improve one’s performance. Pg. 379 It is possible therefore that as in video games, a “false belief in control” leads the youthful gambler mistakenly “to establish a sense of master while playing” the black jack game. For high video game players: “their tendency to wager more could be viewed as an indication of a false sense of security and confidence that they are exerting control over the gambling situation. This illusion of control suggests that the players’ cognitions may be driven by the intermittent schedule of reinforcement in the game similar to those found in video games. . they believe that reinforcement has something to do with their ability to control outcomes, .. It appears as though they get so caught up on the excitement of the game (physiological arousal) that their ability to think rationally is lost.”

Kline (1996) has noted researchers must understand the tremendous growth and sophistication of design within the video game industry. Early studies of video game “effects” involving Pac Man, Space Invaders and even racing games are so primitive that few researchers now consider them relevant to today’s much more realistic, more dynamic and much more ‘violent’ games. As Herz (1997) also notes “Games like Streetfighter and Mortal Kombat are generations away” from those designed in the 1980’s. “They’ve catapulted from total abstraction to full frontal gore and realism. Games like Syphon Filter (a recent top 10 selling game for the PlayStation captures the:

“The action unfolds with heated non-stop gunfire...a conspiracy that deepens as the bodycount rises. Plunge into this suspenseful thriller where enemies are taken on in a hail of bullets or taken out with a stealthy click of the silencer’s trigger.”

Kline (1997) argued a new generation of video games has emerged as game designers learned to target their primary audience of male aficionado’s with more intensely engaging game experiences. ” From interviews with game designers he notices how they focused on producing games with good graphics, lots of action, and play control that

increased immersion and intensity of the play experience. The new 'action adventure meta-genre often combines elements of conflict including combat with other forms of competition and problem solving. For example racing and sports games that involve fighting scenes (*Road Rage*, *NHL Hockey*) or Role Play Games that include shooting, combat and war (*Age of Empires*, *Golden Eye*) so action adventure meta-genre which blends many aspects of game play (strategy, fighting, mastery etc.) are becoming the leading the sellers for both home PC and console games in north America. Games like *Golden Eye* in which the player gets to be James Bond in the movie also has ensured realism so that where you shoot the approaching enemy soldier (knee or shoulder) they die differently. And it is the specter of the evolving game systems and emerging game genres that use first person point of view to situate an imaginary player within a simulated brutal environment that has drawn the attention of US senators and regulators. Noting the historical shift of popular arcade games to the home systems taking place in the early 1990's with the successful promotion of Nintendo (NES) and Sega 16bit systems, de Waal (1995) states that "within the technological cycle of obsolescence and new technology there remains a continuous stream of development. The primary male audience and the violent games they enjoy are continually developed, moving from one video game platform to another." De Waal predicts that games will continue to become more violent "the violent characteristic of video games is likely to remain due to structural industry constraints. New game platforms are in development to create even more realistic three-dimensional fighting games patterned on the concept of the *Mortal Kombat* type game. The industry has found a solid money-generating machine in the fighting game. As my study demonstrated, these violent games provide a dramatic focus of excitement for the player." He therefore undertook a study of the physiological responses of 28 players while playing a violent (*Mortal Kombat*) and an adventure (*Bubsy*) game using the ICARUS© system to simultaneously monitor blood flow (BF), heart rate (HR), eye muscle tension (EMG), and galvanic skin responses (GSR) of two youths alternating between playing and watching each game in sessions of up to 10 minutes.

Through a video record of the sessions, de Waal was able to monitor social interaction between them, as well as construct a time-based record of game events (kills, mistakes

etc.). He also pre-interviewed his subjects asking them about their play histories, and play preferences as well questioning them about their play experiences after the sessions. The factorial design allowed de Waal to compare violent and non-violent play experiences, as well as different subjects playing and watching the same game. This study demonstrates potentially different physiological response to video games between male and female subjects whose heart rate readings were consistently and significantly higher than those of their male counterparts do – but differed between playing and watching only for the violent game. Heart rate (HR) measures provided the clearest evidence that playing was more exciting than watching for all male subjects across games and that playing and watching violent games is more arousing than playing and watching adventure games. Moreover males were relatively less excited by the violent games than females. The GSR readings only reflected a gender difference when playing Mortal Kombat.

		Playing Video Games	Watching Video Games
Boys	Mortal Kombat	121	87.5
	Bubsy	102	90
	Boys Total		
Girls	Mortal Kombat	157	135
	Bubsy	120	118
Totals	Mortal Kombat	126	93
	Bubsy	105	94

De Waal states: “This study clearly shows that video game players are experiencing significantly different levels of excitement and arousal between playing and watching conditions....This would suggest that the content of the video game is secondary to the interactivity”. Yet “players’ reactions to the two different games were almost identical when watching, yet quite different when playing”, so one is forced to “re-examine the role of content in interactive media.” Noting his subjects expressed a general excitement and desire to play with friends whenever possible De Waal suggests the next research step would be to compare the physiological reaction of solitary play to multi-player play.” De Waal goes on to note that kills were rarely mentioned as motivational “Score was not a motivating factor to play. Players expressed advancing in levels, solving problems and life left as the primary forms of gauging their progress through a game. These factors not kill score provided motivation and desire to continue playing. Once a

player passes all the levels of a game, their interest and motivation to play disappears or is sharply reduced” unless a game that can produce the same emotional intensity is discovered. . The de Waal study then indicates that both the symbolic structure of conflict and challenge of violent games are crucial to the pleasure of the play experience.

Interestingly, those who played violent games more frequently and liked them more, were relatively less aroused when playing the violent video game *Mortal Kombat*. Interviews also revealed that the same intensity that makes the gamer want more violent games can also be experienced as frustrating and overwhelming by female players or those less skilled or habituated to such intense experiences. The girls seemed to have more trouble experiencing the intense emotional fighting games as pleasurable especially, possibly because they were less habituated to the excitement and possibly because they were less good at them. Overall, however, the implications of this finding are consonant with an emotional desensitization effect and also suggest that there is greater need to understand why heavy gamers play them and how they experience the various representations of conflict and fighting.

Kline (1998) also notes that interactivity has also enabled game designers to ‘narrativize’ the conflict situation and context with more complex and vivid lifelike graphics, more complete character backstory's, and by adding elements of voice and character construction from Role Play Games. The implications of this new narrativity makes game play less like solving puzzles and more like a participatory experience in a conflict situation. Video games are not just about representation of conflict as much as about experiencing it. Immersion defines the paradoxical quality of gaming experience in which realism is heightened by disbelief – a perception which Herz argues arises from a kind of social contract in which as a player “you have accepted the designers values and assumptions, at least for the duration of the game... . . . Once you’re in the game, you’ve agreed to let someone else define the parameters” (Herz, ??: 223). Kline notes that the latest generation of games have seen new qualities of immersion which arise from designs which allow players the illusion of reality through navigation, choice of characters, settings and point of view all of which strengthen role taking and identification.

The general ascendance of video game media has not therefore been widely acknowledged or studied in Canada either compared with that on television violence and the V-chip. In spite of the continuing Canadian debate about violence in media, only a very few researchers have investigated domestic and arcade play at all. This is surprising given the extensive exposure of Canadian children to this medium. With 80% of households with children having some sort of game system (40% of Canadian households have PC's; 20% the internet), the video game appears to be by far the more important communication medium rivaling television in its acceptance into children's lives (Statistics Canada, 1997). More importantly, as home use of PC studies show, gaming is a significant use of PC's especially among young males ten and over (Envirionics, 1998). Rather than booking hotel rooms, doing homework, reading news this wired generation of Canadian young males, just like their US counterparts, prefer playing *Doom* and *Quake* On-line or off.

Kline (1997) argues therefore, that the heavy promotion of digital technologies, the web, and computers has lead many parents to see all interactive media as educational or benign. Kline concludes that in the light of promotional publicity surrounding computers it "is not surprising that many parents adopt an uncritical attitude towards video game play" which they see as emphasizing computer literacy. Less than 25% of the teens had experienced restrictions from their families with regard to video game whereas 43% had television restrictions. Most of those restrictions were concerned with homework, or the lateness and duration of the play rather than the content of the games and heavy players were no more likely to experience censorship than light players. Kline notes that like US and Australian parents (Sneed and Runco, 1992; Cupitt, 1995) Canadians do not monitor their children's video game play and generally think that computers are good for children. Kline (1998) has recently documented the growing role that action packed video games play in young peoples lives which he thinks constitutes an important new sub-culture of youth. Based on his survey of 650 students aged 11-18 found that although 93% of his sample had played video games and 24% were heavy players. These heavy players were disproportionately male (32% of males 8% of females were "gamers" playing 1 hour per day or more). Light players (11 percent) and moderate players (24 percent) said that they had few friends who played video games while heavy players were split 49 said they

played games with lots or most of their friends and 51 percent playing with few of their friends (Table 67). There were striking differences in the leisure preferences and activities of these gamers.

Table 59: Rank order of favorite solitary activities by gamer.

Light players n=322		Moderate players n=141		Heavy players n=131	
Activity	%	Activity	%	Activity	%
Listening to music	30	Watching TV	22	Video games	41
Outdoor activities	27	Video games	23	Watching TV	25
Watching TV	25	Listening to music	21	Listening to music	15
Video games	8	Outdoor activities	17	Outdoor activities	13
Reading	8	Reading	9	Reading	3

The male gamers were especially electronic in their entertainment preferences watching an average of 20 hours of television a week, almost double the amount that moderate and light players watched. Keeping in mind that heavy players were those that spent at least 7 hours a week playing games, the combined activities of television and video game play took up nearly 30 hours per week, if not more. For these individuals, viewership and gaming complemented each other and most likely occupied the majority of their leisure time. It was also the case the male heavy players preferred the cartoon genre on TV suggesting a graphic link that was important. Kline (1997) speculates that “What seems to differentiate the gamer is the absence of friends and alternative leisure opportunities; heavy gamers resort to solitary media for distraction and entertainment. Our evidence is rather limited on this point but, clearly, video games are an activity, which, like watching TV and videos, is something kids prefer to do when they have no other more social options. Family and sibling play is infrequent, mostly involves playing with brothers, and is more frequent in the occasional player groups.” Solitary video game play is especially attractive to the younger high school age males who are most interested in the great graphics, cool characters and exciting distractions this medium provides. Their favorite games are the ones that most create the combined experience of action, fantasy and simulation. A good game must have most of these attributes, although the heaviest players privileged action, fighting and cool themes. Older males often report a decrease

in both their fascination with video games and time spent in video game play as other social activities outside the home begin to attract them more.

Although most children rate video games positively, gamers find this form of play extremely pleasurable and involving. They said that playing video games was exciting (98 percent of heavy players), interesting (96 percent), pleasant (92 percent) and involving (90 percent). 60 percent of the heavy players characterized gaming as *very* pleasurable and *very* exciting compared to 30 percent of light players and 40 percent of moderate players. Heavy players also found game play to be less frustrating than light players but also tended to rate their own ability as higher. This survey also revealed that certain aspects of video games were more important for heavy players than for light players. For instance, gamers were significantly more likely to say that a good game had to have good characters, lots of excitement, and good weapons, be challenging, responsive, and provide lots of action. These features were all less important to other teens. However, for females the importance of weapons was found to be dependant on how much they played (74 percent of female gamers said that good weapons were important for a game to be fun compared to 54 percent of female light players.) When gamers rated the eight genre categories it was clear that male gamers rated the fighting and or combat genre most enthusiastically (61% vs. 35%), followed by racing (60 vs. 42) and action (60% vs. 35%). On the other hand, female heavy players (71 percent) expressed a strong preference for action games compared to female light players (49 percent).

The intensity, repetitiveness and immersion in the game's play distinguish the heavy player's experience from the more moderate play of the majority. One participant said that he "could play video games for hours and not notice" the passage of time (Kline, 1997). Flow experience is not only valued by gamers, but reflects a dependency behavior that the kids themselves call 'addictive' because it indicates a loss of subjective control and a distortion in the sense of time (Kubey, 1996). Indeed, over 80% of teens felt that video games can be described as compelling or like an addiction, and over 50% agreed that there could be harmful effects of playing them too much. This survey revealed that heavy players were more likely to report that they sometimes displaced homework and chores than light players did. In particular, heavy players were more likely to put off

doing homework and chores (37 percent) and family activities (18 percent) than leisure activities (13 percent) or spending time with their friends (10 percent).

Table 1: Activities that gamers missed out on to play.

Activities displaced	Total n=611 %	Light Players N=310 %	Moderate players n=137 %	Heavy players n=128 %
Homework or household chores**	21	15	22	37
Family activities**	8	7	7	18
Leisure activities**	7	6	7	13
Friends**	5	3	5	10

The majority of heavy players (37 percent) agreed with the statement that ‘some kids played games too much’, a further 27 percent felt that ‘some kids played them obsessively’, and 19 percent believed that many were ‘totally dependent on their video game fix’. Only 10 percent of heavy players said that games were not addictive. Heavy players were more likely to say that games were not addictive when compared to light players.

Table 2.

Addictive potential of video games	
not addictive	5%
video games are quite compelling	7%
some kids play them too much	30%
some kids play them obsessively	34%
many totally dependant on their video game fix	24%

When asked to comment on the effects of violent games, only 15% of teens felt that video games had no bad influence. 24% felt that the negative influence was confined to vulnerable kids, 33% felt the influence was not that serious, and 25% though the negative influence was both significant and widespread. Most strikingly only 20 percent of heavy players felt that violent games had no bad influence at all, compared to only 12 percent of light players.

With regard to what made video gaming violent only forty percent of teens felt the aggressive physical contact and characters being hurt made games ‘violent’, and the minority regarded verbal abuse military themes and kidnapping as violence in video gaming. If desensitization is revealed through the willingness to use the word violence to

characterize aggressive acts, then this result might reflect changing meaning of the term violence as it applies to representational acts. Teens generally agreed on those aspects that did make games violent however, and regardless of how much they played they saw incidents of sexual assault 85%, gore (83%), as well as weapons and shooting (65%) and kicking and punching (57%) as making for violence.

Table 3: Characteristics that make a game violent by gamer.

Characteristic of violent game	Total n=611 %	Light players n=312 %	Moderate players n=134 %	Heavy players n=126 %
Sexual assault**	85	93	79	78
Gore (blood and guts)	83	85	81	79
Punching and kicking	57	59	54	58
Verbal abuse*	53	59	51	50
Military setting	46	49	45	40
Kidnapping***	33	42	30	25

Gender differences for sexual assault, kidnapping and verbal abuse accounted for much of the significant differences in the ratings of violence between heavy and light gamers. Female light players (91 percent) were more likely than female heavy players (79 percent) to say that the occurrence of sexual assault made a game violent.

CONCLUSION

In North America, the video game has arrived as the adolescence witch-hunt of the next century. So rather than television, the moral panic of today's teens is focusing on violent video games (Quittner 1999, Owens 1999). The recent concerns about video game desensitization have created a moral panic. As children's culture commentator Henry Jenkins (1999) recently stated: "when the Littleton shootings occurred calls from the media "increased dramatically. Suddenly, we are finding ourselves in a national witch hunt to determine which form of popular culture is to blame for the mass murders and video games seemed like a better candidate than most."

The moral panic has also spread to Canada. In a recent case where five teens were accused of brutally murdering an 81 year old woman in her home, the press reported

statements by the town mayor who claimed “Young people play Nintendo with scenes of violence and flowing blood”. The article also cites “A group of local teenaged boys who hung around with one of those charged said the boy in recent months became increasingly withdrawn, spending hours playing video games or surfing the net on his home computer. “He used to get into crazy Web sites – murder, pedophilia, there were no exceptions,” said one boy in a baseball cap and cargo pants. “It’s like there were fantasies at work” (Peritz 1999). Jenkins rebuffs this hysteria as a moral panic and in his 1999 statement to Senate committee argues: “We are afraid of our children. We are afraid of their reactions to digital media. And we suddenly can't avoid either.” In recent series of interviews with parents however, I have found that there is growing tension in the family and growing uncertainty about the role that video gaming (on PC's, the net, or game consoles) plays in children's lives.

Yet unlike television and films, where violence and cultural content have been categorized and regulated by the CRTC (Canadian Radio-Telecommunications Commission), video games and the internet have been treated as a different kind of medium, more like telecommunications. There are no restrictions on video games beyond the criminal code: Like the internet video gaming is emerging as a self-regulated global media industry largely because that is how the American’s have viewed it. In the digital global marketplace American’s make world policy. Although Canada has been a leading advocate in television regulation of ‘gratuitous violence’ on TV, this has not extended to video gaming industry. The classification standards most widely used are those of the ESRB’s (Electronic Standards Review Board) self-regulation categories created when the U.S. gaming industry was threatened by a Senate investigation. Indeed, in a 1994 decision the CRTC to allow cable companies to distribute Sega video games (many of them violent and thus violating the 9 o’clock water shed) over the protests of advocacy groups and recent CRTC decision not to regulate the internet are indications that the potentially harmful consequences of video games is not high on Canada’s public policy agenda.

Indeed, as this review of the literature revealed there is in Canada, very little reliable public data on the distribution of video games, on their use, or the reasons why children choose to play them let alone their implications and effects. What I discovered as I set out

to take stock of this evidence is that on a global basis there are almost as many reviews of the literature on violence and video games as there are actual studies. Stone attributes this oversight to the feeling on the part of many academics that computer games are inherently educational, or on the other hand, as an entertainment medium beneath serious contemplation. Additionally, the promotional hype enveloping the Internet and computer literacy, seems to have produced a naive faith among many Canadians that interactive medium are empowering youth for the 'digital era'. Yet the evidence is already available, that like television and films, this interactive entertainment industry may require guidelines for the sale and marketing of gratuitously violent entertainment to children and young people. Although the bleating call for more research is all too familiar, it is time someone sounded the fire alarms.

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