SANITY AND MENTAL HEALTH IN AN AGE OF AUGMENTED AND VIRTUAL REALITIES

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Abstract

In this paper I discuss an approach to examining the boundary and border crossings and breakdown between the real and the virtual. To address questions like "How do gamers and inhabitants of virtual worlds manage these transitions? What are the short and long term effects of these border crossings?" I report on the development of two survey instruments to begin to investigate these questions. The results of these studies have implications concerning how virtual realities may induce dissociative experiences or lead to a blurring of boundaries of the real, of the virtual, of dreams and even identity.

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Today we engage in border crossings between the real and the virtual. Through social networking software, immersive games or augmented realities we transition from one electronic domain to another and then back. Done quickly and easily, these new technologies blur the boundaries of the real and virtual. How do gamers and inhabitants of virtual worlds manage these transitions? What are the short and long term effects of these border crossings? How do game players easily distinguish the real and not real? Will we some day be unable to tell or not even care? How do we achieve a consensus about the manufacture of reality and of mental health?

I developed two survey instruments to begin to investigate these questions. The results of these studies have implications concerning how virtual realities may induce dissociative experiences or lead to a blurring of boundaries of the real, of the virtual, of dreams and even identity. Along with the confusion of the real and the virtual there may be an accompanying erosion of a consensus regarding where we place those boundaries.

Edward Castronova [1] argues that there is a competition between the real and the virtual: "Simple economic theory predicts that in this competition the real world is going to lose." For Castronova it is a competition for people's time and attention.

Attention is determined by where you are looking. It is a finite and time dependent resource. "Gaze is location. Gaze migration is attention migration." Today we gaze at our screens at least as much as we gaze at the 'real' world. According to Castronova, virtual worlds and games offer more positive experiences than the real world. Fun is hard-wired in the brain. Games are fun, induce flow [2] and activate the brain's neuro-chemical reward system. While money can satisfy basic needs, fun is a higher order 'need' that is consistent with Maslow's idea of self-actualization [3]. People will 'migrate' to where they have those experiences. Castronova argues that "People will move if it better for them to do so," and suggests that 'fungineers', that is, game designers, are engineering a mass migration to the virtual. This will remake the real world. Where-as the cost of moving is high in the real world, the cost of crossing the border between the real and the virtual is low and nearly instantaneous.

The cultural world is a human made construct. It is as real as the physical things of the world. Castronova points out that virtual society and 'real society' share many of the same structures and patterns of behavior. Virtual reality and games are other 'real' places where human behavior plays out and can make life more exciting, rewarding, heroic and meaningful. It is rational to spend as much time as possible in virtual reality. A generation has grown up socialized in both the real and the virtual. Castronova suggests that one day a new generation will demand of the 'real' world what they experience in the virtual.

Framing the Problem

Terminology referencing conceptual places, frames, boundaries and borders has an extensive history of usage across various disciplines. Erving Goffman [4] introduced the concept of the frame and used "strip" to refer to "any arbitrary slice or cut from the stream of ongoing activity, including here sequences of happenings, real or fictive, as seen from the perspective of those subjectively involved in sustaining an interest in them." Zerubavel [5] suggests that we erect "mental fences" which delimit "geographical areas, historical events, people, ideas, and so on that appear to be contiguous, similar, functionally related, or otherwise associated."

For boundary theory, daily life is "sliced" and partitioned into discrete domains where one concentrates on what is more salient [6]. Similarly, border theory [7] addresses work-life balance and studies conflicts between work, family and "third places." Both theories employ concepts such as boundaries, borders, domains, roles, transitions and behavioral scripts. Roles can have flexible borders. Behavior can spill over from one domain into another. Permeability [8], a key concept in both theories, "is the degree to which a role allows one to be physically located in the role's domain but psychologically and/or behaviorally involved in another role."

Conventional border/boundary theory accounts only for domains of work, family and "third places." The domains of games or virtual reality constitute arguably a fourth place. Mixed augmented realities could also be treated as logically separate domains. Information itself can be thought of as another domain supported today by cloud computing. In international affairs, Vlahos describes information as representing a 'place' or domain [9]: "Communication networks established by advances in informational technology create a 'place,' called the info-sphere, in which people form new social, political and employment arrangements. The creation of this place amounts to a major change in human history."

Squaring the Circle

For Salen and Zimmerman [10] play is "a cognitive frame." It is "a way of looking at the world" and "affects how we make sense of things." They write that "As a player steps in and out of a game, he/she crosses the boundary (frame) which defines the game in time and space. The cognitive frame establishes the 'reality' of the game and the relationship between the artificial world of the game and the 'real life' contexts it intersects." Gregory Bateson [11], writing from the perspective of cultural anthropology, also invokes the use of the concept of the frame: "play occurs within a delimited psychological frame, a spatial and temporal bounding of a set of interactive messages." The concept of the frame is consistent with Huizinga's notion of the magic circle [12]:

"All play moves and has its being within a play-ground marked off beforehand either materially or ideally, deliberately or as a matter of course. Just as there is no formal difference between play and ritual, so the 'consecrated spot' cannot be formally distinguished from the playground. The arena, the card-table, the magic circle, the temple, the stage, the screen, the tennis court, the

court of justice, etc, are all in form and function play-grounds, i.e. forbidden spots, isolated, hedged round, hallowed, within which special rules obtain. All are temporary worlds within the ordinary world, dedicated to the performance of an act apart." Yet border/boundary theories do not account for such concepts as the magic circle.

Permeations

Drone Pilots for the United States Air Force are on the front lines of a mixed reality between the real and virtual. Piloting unmanned aerial vehicles far removed from the battlefield, they work an 8-hour day in an environment not unlike some video game flight simulators. After a day's work they return home to their loved ones. The contrast between work and family life could not be greater. Anecdotal accounts indicate some of these pilots experience higher levels of stress and conflict. To use the terminology of border/boundary theories, the permeable boundaries between workplace and home may lead to spillover effects such as Post Traumatic Stress Disorder (PTSD).

A former Predator drone pilot remains haunted by the accidental killing of a child when he was ordered to launch a Hellfire missile at a targeted building in Afghanistan [13]. He was unable to sleep and broke up with his girl friend. At one point he collapsed and coughed blood. He was eventually diagnosed with PTSD.

Many of these pilots live and work in the continental United States. A drone pilot is physically present in one domain, however he or she must be psychologically and perceptually in another domain (the virtual representation of the battlefield). When they leave work they must immediately transition back to everyday life. Many have young children of their own. Some are unable to maintain the boundary between work and family life. PTSD is a possible result of the permeations and spillover from the virtual to the real. Additional research is required to tease out the permeations and conflicts between the domains of family, workplace and the mixed reality of the remote, virtual battlefield.

Google Glass promises yet another brave new world of mixed realities. This technology offers the exciting vista of wearable computing for anywhere, anytime access. Instead of transitioning back and forth between the real and the virtual, Google Glass allows permits one to experience the virtual and the real at the same time. The user can mix reality by viewing photos or videos or even augment the real with a computer generated overlay.

The walls between the real and virtual will continue to erode with ever more intrusive interface technologies. Critic Steven Rosenbaum [14] points to the logic of increasingly intrusive user interfaces:

"The next step for game designers is to introduce psycho-emotional inputs measuring anything from heart rate, facial analysis, voice measurement, skin conductance, eye tracking, pupil dilation, brain activity, and your ever-changing emotional profile. These games will know the user at a subconscious level and deliver an experience that could forever blur the line between virtual and reality."

There is a longstanding debate over the lasting psychological effects of violent video games. At best, the evidence points to correlations but no causal effects. Yet 'permeations' have had real impacts on real lives. For Devin Moore [15], the boundary between the real and the virtual completely collapsed when he acted out a script straight from Grand Theft Auto Vice City. Moore shot dead three policemen. When apprehended Moore purportedly said, "Life is a video game. You've got to die sometime." Moore's lawyers invoked the 'GTA' defense claiming excessive game play of GTA 'programmed' him to enact a GTA scenario. His defense lawyers also claimed Moore suffered PTSD from a history of child abuse. Devin Moore was convicted of murder and sentenced to death on October 9, 2005.

In the Diagnostic and Statistical Manual of Mental Disorders abbreviated as DSM-5 [16], PTSD is classified as a trauma and stress related disorder. A striking characteristic of PTSD is persistent re-experiencing of the traumatic event. This suggests that given the right conditions there can be confusion between real life and past events.

Virtual reality therapy (VRT) or virtual reality immersion therapy is designed to recreate or replay virtual scenes, which allows patients to re-experience a trigger event without the real world risks. By repeated exposures, a patient habituates to the trigger event and no longer re-experiences the psychological trauma and stress. The efficacy of VRT has been validated as a treatment for PTSD [17]. VRT has already moved in the direction of Rosenbaum's prediction. VR-based therapy can allow clinicians to add and adjust the intensity of sound, smells or and vibrations in order to discover what triggers a subject's reactions.

Dissociation

Individuals who suffer from PTSD are also more likely to have a dissociative disorder. One study of a population of women diagnosed with dissociative disorders showed that seven percent also suffered from PTSD [18]. In other words, those with a diagnosis of PTSD all suffered from a dissociative disorder. The DSM-V [19] defines dissociation as: "the disruption in the usually integrated functions of consciousness, memory, identity, or perception of the environment."

Dissociation is not always considered pathological. It can be a sought-after experience as part of religious rituals, self-induced trance and altered perceptual states. The diagnostic criteria for dissociative disorders from the Diagnostic and Statistical Manual of Mental Disorders Fourth Edition, Text Revision (DSM-IV-TR) [20] could easily be used to characterize the experience of immersion in virtual worlds and games. The diagnostic criteria for depersonalization disorder, as outlined in the manual, describes a "Persistent or recurrent feelings of being detached from one's mental processes or body; as if an observer." This fits the relationship of the player to the playable character in a game or the user to his or her avatar. Similarly, the DSM-IV-TR emphasizes that when an individual experiences depersonalization, "reality testing is intact."

Depersonalization can be accompanied by derealization (sometimes linked with descriptions of out-of-body experiences). The DSM-IV-TR describes symptoms of derealization as "The perception or experience of the external world so that it seems strange or unreal" and "feeling as though one's environment is lacking in spontaneity, emotional coloring and depth." Subjects may experience an alteration in the perception of object size or shape. People may seem unfamiliar or mechanical. Derealization has been described as an immaterial substance that separates a person from the outside world like a fog, a pane of glass, or a veil. Feelings of déjà vu or jamais vu are common. Familiar places may look alien, bizarre, and surreal. The same

could be said of the virtual worlds of games.

In games the player takes on another personality by enacting the role of a playable character, be it Master Chief in Halo or Tommy Vercetti in Grand Theft Auto: Vice City. In virtual worlds like Second Life, 'residents' may have multiple avatars having different genders through which they enact very different personalities. Such role-playing fits with the description of Dissociative identity disorder in the DSM-V:

"The primary feature is the presence of two or more distinct personalities, self-reported or observed by others, resulting in failure to recall everyday events and/or important autobiographical information, and impairing continuity in the sense of self. The 'experience of possession' is included as a 'personality'."

Such comparisons to the diagnostic criteria used for dissociative disorders suggest that 'users' of Second Life have experiences akin to depersonalization, derealization or even dissociative identity disorder. To test this conjecture a new survey instrument was developed and administered by Social Research Foundation [21] to a population of 59 self-identified as female and 51 self-identified as male (total 110) users of the virtual world Second Life. Respondents completed the survey online anonymously. The survey was modeled on a subset of questions from the Structured Clinical Interview for Depersonalization – Derealization Spectrum (SCI-DER) [22]. This was chosen as a model because it is a reliable and validated survey instrument and it includes questions that correlate to the DSM-IV criteria for dissociative disorders exploring the 'presence' or 'absence' of symptoms. Responses are binary (yes/no). Scores are obtained by counting the total of positive answers.

In the new survey instrument [23], question #17, which indicates the presence of depersonalization, asks: "While in Second Life have you ever experienced just for a few seconds or for a longer period of time…that you were a 'detached observer'?" 51% of the male subjects responded yes while only 47.5% of the female subjects responded yes.

Question #23 corresponds to Dissociative Identity Disorder: "While in Second Life have you ever experienced just for a few seconds or for a longer period of time…that you use two or more distinct avatars having different personalities?" 49% of the male subjects responded yes while 47.50% of the female subjects responded yes.

As scoring is based on the total number of positive answers, results [22] showed that a significant number of subjects self-reported yes to each of the questions in the survey. A parsimonious interpretation is that subjects appear to have dissociative experiences in virtual worlds. Yet these findings raise more questions. For a given population will respondents report having similar experiences in the real world? Would a survey focusing on Augmented reality produced similar or different results?

Boundaries Matter

The Boundary Questionnaire (BQ), developed by Ernest Hartmann and collaborators [24], use the notion of boundaries as an investigative tool to gain insights on how we navigate back and forth between the real and the virtual. The BQ is a 138-item survey instrument that covers 12 categories of boundaries. It yields a numeric measure for the 'thinness' or 'thickness' of "perceptual boundaries, boundaries related to thoughts and feelings, boundaries between states of awareness or consciousness, sleep-dream-wake boundaries, boundaries related to memory, body boundaries, interpersonal boundaries, boundaries related to sexual identity and other forms of identity, group boundaries, and boundaries in opinions and judgments."

Hartmann's theory of dreams utilizes a "wake-dreaming continuum" that begins at one end with "focused waking thought" having thick boundaries characterized by "solid, divisions, categorizations," while at the other end is "dreaming" having "thin boundaries" and characterized as "merging, condensation, loosening of categories."

The Boundary Questionnaire is available online in a shortened form [25]. The instructions for the Short-Form Boundary Questionnaire may be modified as follows to be administered to a population of users of the World of Warcraft: "Please rate each of the statements from 0 to 4 (0 indicates 'not at all true of me when logged into World of Warcraft;' 4 indicates 'very true of me when logged into World of Warcraft'). Try to respond to all of the statements as quickly as you can."

Hartmann writes that "women score consistently thinner than men," and that older subjects tend to have thicker boundaries than younger subjects. Artists have "thinner" boundaries while those who have higher thickness scores are "naval officers, salespersons, and lawyers." It remains to be seen what frequent players of World of Warcraft report.

Mending Fences

Simon Baron-Cohen [26] reminds us that psychiatric diagnoses are "man made" and that "how we think about mental disorders" changes with successive generations of experts. He continues: "Part of the reason the diagnostic manual can move the boundaries and add or remove "mental disorders" so easily is that it focuses on surface appearances or behavior (symptoms) and is silent about causes."

We look to further research to provide certainty. Yet Baron-Cohen's assertions suggest we can have at best tentative and provisional answers as we seek to establish the boundaries of mental disorders. Karl Popper [27] warns us the scientific method only offers provisional answers: "The old scientific ideal episteme–of absolutely certain, demonstrable knowledge–has proved to be an idol. The demand for scientific objectivity makes it inevitable that every scientific statement must remain tentative forever. It may be corroborated, but every corroboration is relative to other statements, which, again, are tentative. Only in our subjective experiences of conviction, in our subjective faith, can we be absolutely certain."

It should be acknowledged that the framework of border/boundary theories, the diagnostic criteria of the DSM-IV-TR, and the categories of the Boundary Questionnaire are at best human made constructs that yield answers both tentative and provisional but not certain. The survey results suggest users and players of virtual worlds and digital games do indeed experience dissociation. But rather than being considered pathological, dissociation is here shown to be a sought after experience. With the advent of mixed, augmented and virtual realities this blurring of boundaries is already a part of daily experience. In turn we may need to reconsider our basic notions of mental health and mental disorders.

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